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Corn harvest on the Genesee river model in the State Museum of a group of Seneca Indians

GEOGRAPHY OF NEW YORK

BY ALBERT PERRY BRIGHAM AND CHARLES T. MCFARLANE

Early History.—When the white man first visited the region which is now the state of New York, he found it covered nearly everywhere with forest. In the forest dwelt Indians, among whom the Iroquois were the most important. They consisted of the Mohawk, Oneida, Onondaga, Cayuga, and Seneca tribes. Their home was along the plains south of Lake Ontario and extending eastward past Oneida Lake into the Mohawk Valley; but their hunters and warriors roamed over a wide area. At their villages they had small clearings where they raised corn, pumpkins, apples, and other products. Nearly 5000 Indians are now living on small reservations in New York state.

Henry Hudson's explorations for the Dutch in 1609 led to permanent settlements by the Dutch people, extending from New Amsterdam (later the city of New York) up the Hudson River to Albany, which they called

Fort Orange, and up the lower Mohawk River. In 1664, a British fleet took possession of the colony; and thenceforth, except for a short time in 1673-1674, New York remained under English rule, until the thirteen Colonies declared their independence in 1776.

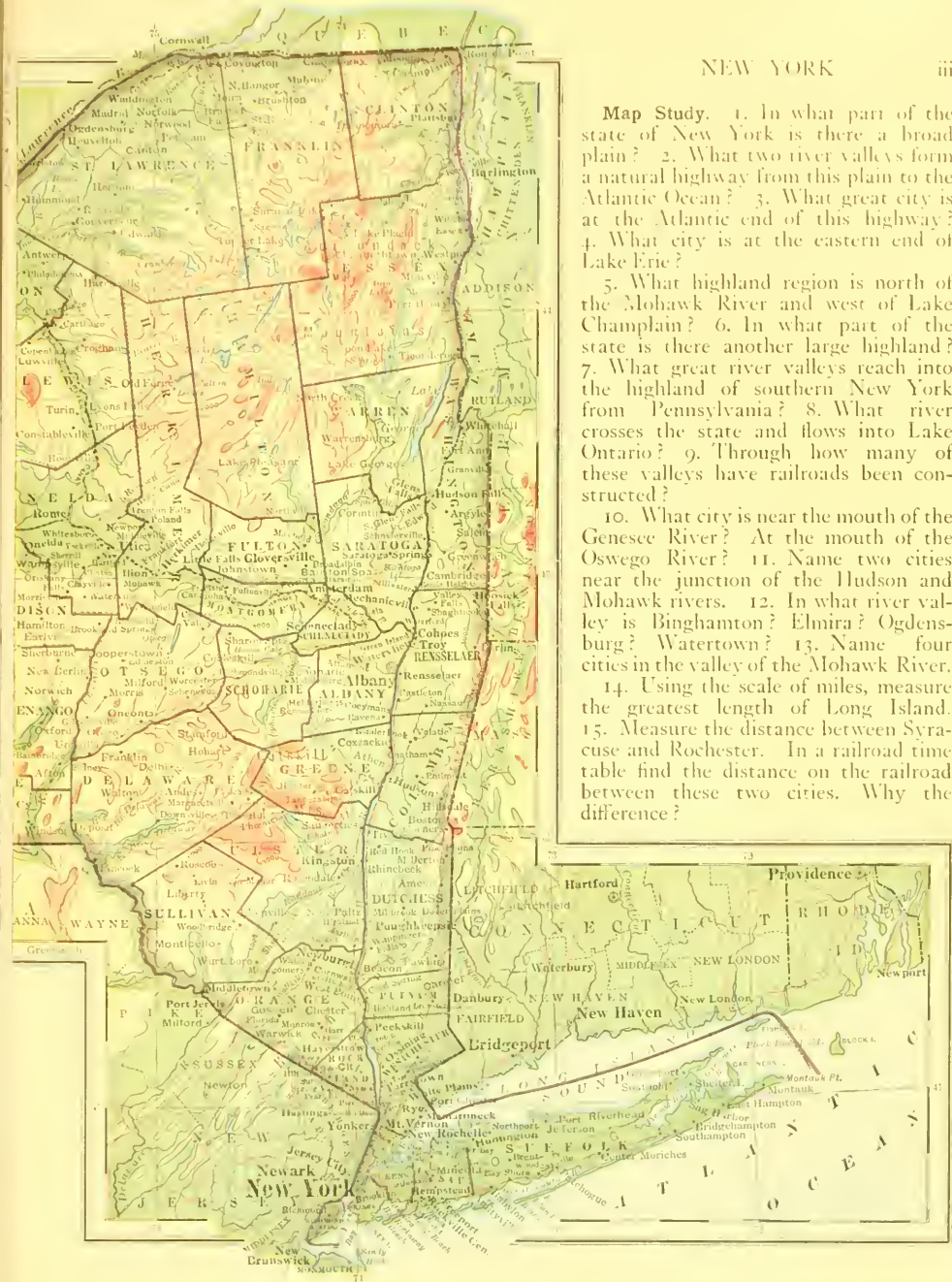
In the year of Hudson's voyage, a great French explorer, Champlain, coming from the St. Lawrence Valley, sailed up the lake which bears his name. He and other French explorers also visited the regions along the St. Lawrence River and Lake Ontario. They built a fort at the mouth of the Niagara River, and sought to control northern and western New York. Thus the English came into conflict with the French along the lakes and the St. Lawrence. In the wars that followed the English were finally victorious, so that France ceded its American possessions to Great Britain.

Map Study. 1. In what part of the state of New York is there a broad plain? 2. What two river valleys form a natural highway from this plain to the Atlantic Ocean? 3. What great city is at the Atlantic end of this highway? 4. What city is at the eastern end of Lake Erie?

5. What highland region is north of the Mohawk River and west of Lake Champlain? 6. In what part of the state is there another large highland? 7. What great river valleys reach into the highland of southern New York from Pennsylvania? 8. What river crosses the state and flows into Lake Ontario? 9. Through how many of these valleys have railroads been constructed?

10. What city is near the mouth of the Genesee River? At the mouth of the Oswego River? 11. Name two cities near the junction of the Hudson and Mohawk rivers. 12. In what river valley is Binghamton? Elmira? Ogdensburg? Watertown? 13. Name four cities in the valley of the Mohawk River.

14. Using the scale of miles, measure the greatest length of Long Island. 15. Measure the distance between Syracuse and Rochester. In a railroad time table find the distance on the railroad between these two cities. Why the difference?



Position.—New York is in the northeastern part of the United States. What states border it on the east? On the south? Canada is on the north and west; what rivers and lakes are on the boundary?

The state extends from the Atlantic Ocean at the southeast to the Great Lakes at the northwest. This position between great waterways has promoted the growth of population and commerce, from early colonial days to the present time. New York is between $40^{\circ} 30'$ and 45° north latitude. The city of New York is in nearly the same latitude as Madrid, Naples, Constantinople, and Peking. In what longitude is it?

Size.—The total area of New York (not counting any part of the Great Lakes) is 49,204 square miles, of which 1550 miles are water surface. The state is nearly six times as large as Massachusetts, but less than one fifth the size of Texas. It is slightly larger than Pennsylvania. From north to south the state extends 312 miles, covering about $4\frac{1}{2}$ degrees of latitude. A railroad journey from the city of New York to Rouses Point takes about $9\frac{1}{2}$ hours. From east to west, exclusive of Long Island, the distance is slightly greater, —326 miles.

Review.—1. Name the several Iroquois tribes. 2. Describe the coming of the Dutch and the English. 3. What was the early name of Albany? 4. What parts of New York did the French hold? 5. What classes of geographic names are found in New York?

6. What are the boundaries of New York? 7. What large foreign cities are in about the same latitude as the city of New York? 8. What is the area of the state? 9. How does its area compare with that of Massachusetts? Of Texas?

PHYSICAL FEATURES

Most of Long Island and Staten Island are low, flat, and sandy, like the Atlantic coastal plain farther to the south; but some parts are hilly with glacial moraines. Eastern New York belongs to the Appalachian Mountains, although the mountains there have been worn down in places almost to sea level. Man-

hattan Island and the Hudson region below the Highlands belong to a hilly lowland, often called the Piedmont region. Southern New York from the Catskills westward is part of the Appalachian Plateau. Finally, the Lake Plains in New York are extensive, especially about Lake Ontario. The state has therefore a great variety of surface and soil. This causes great differences in climate, and in the crops that can be



grown, in the different parts of the state.

Atlantic Coast Region.—Long Island, the largest island on either coast of the United States, is a part of New York. As its name suggests, its length, 118 miles, is much greater than its extreme width, about 23 miles. The highest point is but little more than 400 feet in altitude. Most of the island is covered with clay, gravel, and sand deposited by glacial ice and by streams flowing from the ice. Through the middle of the island, from west to east, extends a belt of hills, a terminal moraine of the ice sheet. On the north border is another belt of such hills. Among the hills are many ponds and lakes, such as are commonly found in moraine belts. The south parts of the island are nearly flat, sloping gently toward the shore.

At the eastern end of the island the waters of Gardiners Bay and Peconic Bay reach



Beach at Coney Island

into the land about 30 miles. Along the northwest shore deep bays penetrate the hilly region to a distance of several miles. On the south shore there are long stretches of quiet water, inclosed between the main island and long bordering barrier beaches. Of these Jamaica and Great South bays are the largest. The longest of the beaches is Fire Island Beach, on which Fire Island light has been erected. Others, famous as summer resorts, are Coney Island and Rockaway Beach, visited daily during warm weather by many thousands from the great cities.

On the western end of Long Island are Brooklyn and Queens, two of the boroughs of Greater New York. Many people who carry on business in the great city live in the smaller villages and cities of Long Island, and along the north and the south shores there are many beautiful summer homes.

Much of the land is cultivated as truck farms or market gardens, and Long Island thus furnishes a large supply of vegetables and fruits for the metropolis.

Staten Island is much like Long Island in character, and constitutes the borough of Richmond. It is separated from Long Island by a strait called the Narrows.

At the time Manhattan Island was first settled by white men, its surface was rather irregular. It consisted largely of hard rocks, most of which were but thinly covered with soil. As the great city has spread over the island the smaller irregularities have disappeared. Minor elevations have been blasted away and minor depressions have been filled. Some larger hills, however, still remain in the northern part of the island, as at Morning-side Heights.

Most of the waters which surround Manhattan are deep enough to permit large ships to approach the numerous wharves along the water fronts. On the New Jersey side of the Hudson River are other great wharves, some of them lying under the Palisades, a lofty ridge of lava rock running many miles up the river. The steep cliff adjoining the river is exceedingly picturesque.



Looking down the Hudson, in the Highlands

Mountain and Valley Region of Eastern New York.—Along the eastern border of the state, from Long Island Sound to the head of Lake Champlain, is a belt of hills and low mountains, which may be called the foothills of the Berkshires and of the Green Mountains of New England. They lie mostly east of the Hudson, and are the result of the folding of ancient rock beds, followed by the wearing away of the rocks by weathering, glaciers, and streams.

Between Beacon and Peekskill, the Hudson flows through a gorge cut across an older mountain belt which crosses the state in a northeast and southwest direction. This is the Hudson Highlands, which have an altitude of 1500 to 1800 feet.

North of the Highlands, the Hudson occupies part of a broad valley that reaches from Glens Falls along the Hudson to Kingston and Newburgh and along the Wallkill River to the southwest, into northwestern New Jersey. It is a northern continuation of the Great Appalachian Valley which extends from Alabama to Pennsylvania.

This valley is bordered on the northwest by a mountain range which enters the state on the south at Port Jervis. It is a north-eastward continuation of the Appalachian ridges of central Pennsylvania. In southern New York the range is called the Shawangunk (pronounced shon'gum) Mountains.

Adirondack Mountains.—The Adirondack Mountains, like the Highlands of the Hudson, are very old. They occupy the greater part of northern New York, in a circular area about 100 miles in diameter. The highest mountain in this region, and in the state, is Mount Marcy; its altitude is 5344 feet. The ridges and valleys of the Adirondacks have a northeast and southwest direction. The main valleys lie below 2000 feet, and where they were obstructed by deposits of glacial waste they contain many beautiful lakes and ponds. Among such bodies of water are the Saranac Lakes, Lake Placid, Long Lake, the Tupper Lakes, Schroon Lake, the Ausable Lakes, and the Fulton chain of lakes.



Mt. Marcy—the highest peak at the left—as seen from Mirror Lake, near Lake Placid



Lumber mill in the Adirondacks



Kaaterskill Lake, in the Catskills

Owing to the altitude, the climate of the Adirondacks is severe; the winters are long and the snowfall is heavy. Even the summer days are of moderate heat, and the summer nights are cool.

The rocks of the Adirondacks are hard, the soils are thin, and the mountains and valleys alike are covered with forest, chiefly of evergreen trees, such as pine, spruce, and hemlock. Little agriculture can be carried on, and the chief use of the region is for recreation and health. There are thousands of hotels, summer homes, and camps, and the excellent boating, fishing, and hunting attract many visitors in season.

There is much lumbering in the Adirondacks, and there are many sawmills and paper mills in and near this region. In order to preserve the forests from destruction, the state has bought large tracts of Adirondack lands and holds them as a forest reservation. The object is not only to preserve the lumber, but to prevent floods along the Mohawk, Hudson, and other streams. So long as the forests stand, the mosses, leaves, and forest soil absorb the falling rain, and keep it from pouring at once down the streams to overwhelm fields and homes in the lower valleys.

Plateau Region. West of the Hudson River and north of the Wallkill is the upland known as the Catskill Mountains. It faces the broad Hudson Valley by a steep slope or

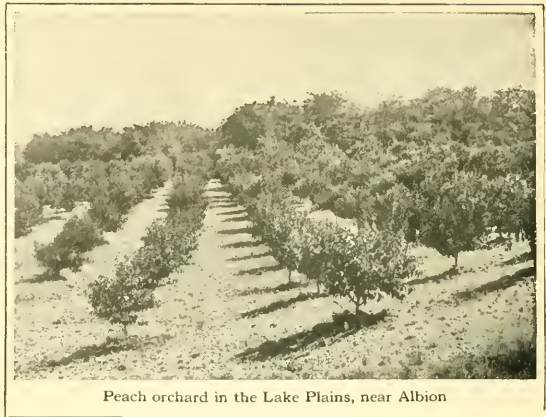
escarpment, which in its middle and southern parts ranges from 2500 to 4000 feet in altitude. It is a region of many lofty hills and deep valleys and is a part of the highland which extends from eastern New York to Alabama and is called the Appalachian Plateau.

North of the Catskills and west of Albany, the plateau rises from the Hudson lowland by the Helderberg Escarpment, a bold cliff often called the Helderberg Mountains. The plateau is bordered on the north by hills sloping down to the Mohawk and to the plains farther west. In central and western New York the highland averages from 1800 to 2000 feet in altitude, with broad, open valleys several hundred feet deep.

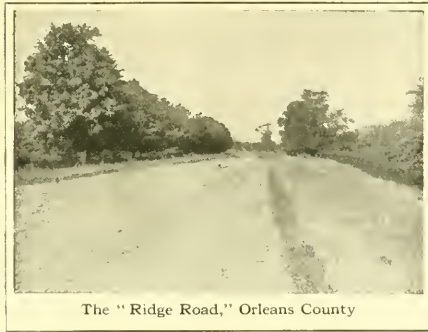
In the plateau region west of the Catskills, the valleys usually extend in a north and south direction, and have influenced in a marked way the laying out of roads and railroads. In this region there are many such well-known lakes as Otsego Lake, and the Finger Lakes, which include Skaneateles, Owaseco, Cayuga, Seneca, Keuka, and Canandaigua. Winds from these bodies of water help to moderate the climate of the bordering lands: they are cool on warm spring days, and warm on cold autumn days. This effect on the weather favors the raising of grapes and other fruits. The pleasures of boating and fishing and the cool breezes from the lakes attract many summer residents to the villages and camps along their shores.

Lake Plains.—At the eastern end of Lake Ontario, along its southern border, and about the east end of Lake Erie is a region of lowlands known as Lake Plains. From Lake Ontario they extend eastward to include the Oneida Lake region, and continue with a breadth of several miles as far east as the city of Rome. Syracuse is on the south edge of the plains. The lowlands reach north in the western parts of Oswego and Jefferson counties, and continue along the St. Lawrence River in northern New York.

At one time the waters of the Ontario basin covered these lowlands from the Niagara region to the neighborhood of Watertown. The St. Lawrence Valley was blocked



Peach orchard in the Lake Plains, near Albion



The "Ridge Road," Orleans County

by glacial ice and the outlet of the lake was at Rome, down the Mohawk Valley. This ancient lake is known as the glacial Lake Iroquois.

Beginning at the Niagara River, at Lewiston, New York, a broad, low, gravel ridge runs along the plains to a point east of Rochester. As this ridge was above the swampy surface of the adjoining forests, it was used by early settlers as a roadway, and this highway, thickly dotted with farmhouses, is still known as the Ridge Road, in Niagara, Orleans, Monroe,

and Wayne counties. This ridge was a barrier beach built in the shallow waters along the south shore of Lake Iroquois. The belt of lowland to the north of it is still covered in many places by the fine silt brought in by streams and deposited on the bottom of the lake.

A higher plain stretches northward and eastward from Buffalo, and is called the Erie lake plain. Before the time of Lake Iroquois, it also was covered by lake waters. The Erie plain descends to the Ontario plain by a steep slope known as the Niagara Escarpment. This is the northern edge of hard limestone rocks over which the Niagara River tumbles to make the great falls.

Glacial Invasion.—In times long ago, called the Glacial Period, all of the mainland of New York, except small areas in Allegany and Cattaraugus counties, was covered with a slowly-moving sheet of ice. The ice flowed across the Adirondacks, the Catskills, and the plateau region farther west, and covered most of northern Pennsylvania.

This immense glacier pushed along in front of it and under it a vast amount of soil and broken rock. More material of the same sort was carried along with the ice and accumulated at the melting margins of the ice sheet. Hills of sandy soil, gravel, and stones, formed



Drumlin, Orleans County

in this way, are called *moraines*. Such hills are found near Rochester, Ithaca, and Cortland, and at Oriskany Falls and in many other parts of the state.

Stones frozen in the ice were rubbed over the bed rocks and gradually worn away, forming a fine clay in which some worn stones were also mixed. Some of this material, called *boulder clay* or *till*, was packed into valleys over which the ice passed, thus blocking the channels through which preglacial streams had flowed.

Some of the boulder clay gathered in hills called *drumlins*, shaped by the ice pushing over them. In the region between Syracuse and Fulton on the east and Rochester on the west, and from Auburn and Geneva to Lake Ontario, there are hundreds of drumlins running north and south and rising from 50 to 150 feet above the surrounding plain.

When the ice finally melted from the surface of the state, it left a sheet of stony clay, or till, on most slopes and tops of hills and mountains. But much of the finer muds and sands had been sorted and spread out on lower lands by the streams that flowed from the melting ice.

Many of the cobbles and boulders remained where they were dropped as the ice melted. Almost everywhere the fields of New York show boulders and cobbles which are unlike the bed rocks that lie beneath the soil. Boulders in western New

York may have come from Canada or from parts of the state north of the locality where they are found. Boulders on the plateau in central New York may have come from St. Lawrence County, or from the Adirondacks or from the Mohawk Valley.

Gorges and Waterfalls.—No other state in the east has so many splendid waterfalls and gorges as New York. At the close of the Glacial Period, the Niagara River plunged over the Niagara Escarpment at Lewiston. Since that time the gorge, now seven miles long, has been cut, the falls retreating slowly to their present position. So wonderful are



Gorge of the Genesee River, Letchworth Park

the falls and the gorge that the adjoining ground has been made a state reservation, under the control of the Niagara Commission.

The other great gorges and falls of the state are also more or less due to the glacial invasion. Deposits of glacial waste clogged old valleys and caused the streams to take new courses over rock ledges, and the deep, narrow channels then made are not yet old enough to have been broadened by the stream and by the wasting of the valley sides. Fine examples of such gorges are found along the Genesee from Portage to Mount Morris, and along the same stream at Rochester. Letchworth Park, belonging to the state, is at the upper and middle Portage Falls.



Lake George

There are many gorges and waterfalls in the Finger Lake region. Of the gorges Watkins Glen—another state park, at Watkins—is the best known, and is of great beauty. The gorge is in places 300 feet deep, and the small stream that flows through it forms a constant succession of fine cascades and rapids. Near Cayuga Lake is Taghonic Falls, whose height is the greatest in the state, over 200 feet.

On West Canada Creek is the Trenton gorge, in which are several beautiful falls. The Cohoes Falls are on the lower Mohawk. The Ausable Chasm is a narrow gorge near Lake Champlain.

Review.—1. What physical regions of the eastern United States are represented in New York? 2. Describe the surface of Long Island. 3. Name some of the beaches on the south shore. 4. Describe the surface of Manhattan Island.

5. Locate and describe the gorge of the Hudson. 6. Describe a valley which joins the Hudson Valley at Kingston. 7. Where are the Shawangunk Mountains? 8. Name the highest mountain in New York, and give its altitude. 9. What are the chief occupations in the Adirondack region? 10. Why should the Adirondack forests be preserved?

11. Of what great region are the Catskill Mountains a part? 12. What is the Helderberg Escarpment? 13. Describe the plateau in central and western New York. 14. What purposes are served by the lakes of the plateau?

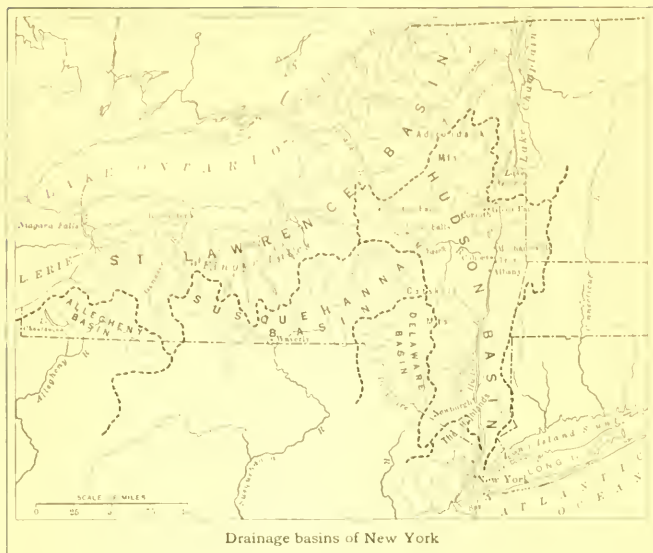
15. Describe the glacial Lake Iroquois. 16. Explain the origin of the "Ridge Road." 17. What is the Niagara Escarpment? 18. What is till? 19. What part of New York has many drumlins? How were they shaped? 20. What gorges and waterfalls are owned by the state?

Lakes.—New York has an exceptional number of large lakes, and most of them are due to the glacial invasion. Besides Lake Ontario and Lake Erie, there are such large bodies of water as Chautauqua, Seneca, Cayuga, and Oneida lakes, Lake Champlain, and Lake George. The Finger Lakes are in old valleys which

were deepened and blocked by the ice and its deposits. The same is true of the Adirondack Lakes. In all parts of the state are small lakes and ponds, many of which lie on the uneven surface of the glacial drift, especially where thick morainic accumulations are found.

Drainage.—The student should review the account of rivers and valleys in the early part of the geography. The drainage of the mainland of New York is remarkable for the fact that its waters belong to so many river systems, reaching the ocean by way of the Gulf of St. Lawrence, New York Bay, Delaware Bay, Chesapeake Bay, and the Gulf of Mexico. Let us study the different river systems of the state in this order.

The St. Lawrence Drainage.—A study of the map on page xi shows that more of New York state drains into the St. Lawrence than into any other river system. Several small streams flow into Lake Erie or into Niagara River. The Genesee, the chief river of western New York (p. ii), flows northward across the state to Lake Ontario. The waters of all the Finger Lakes and of Oneida Lake reach Lake Ontario through the Oswego River. The Black River drains a large section of the western Adirondacks and is the most important stream in that part of the state. Like the streams already mentioned, it discharges into Lake Ontario, and as the St. Lawrence River is the outlet of Lake Ontario, the waters from all these streams finally reach the Atlantic through the Gulf of St. Lawrence. The same



Drainage basins of New York

is true of the drainage of the northern and northeastern Adirondacks. The Oswegatchie, Grass, Racket, St. Regis, and Salmon rivers flow into the St. Lawrence, while the Saranac and Ausable rivers and the waters of Lake George reach the main stream through Lake Champlain.

The Hudson Drainage.—The Hudson River is the great stream of the southeastern Adirondack region. It leaves the mountains a little above Glens Falls and occupies a broad lowland valley to a point below Newburgh, thence following the Highland gorge and the foot of the Palisades. In its upper course there are numerous falls and rapids, but below Fort Edward there are dams and locks making it part of the Barge Canal, and from Troy to the ocean it is a tidal stream, much used as a waterway. The falls are used for the development of water power especially at Corinth, Spier Falls, Glens Falls, and Mechanicville. Scarcely less important than the main stream is its great western tributary, the Mohawk. The northern branches of the

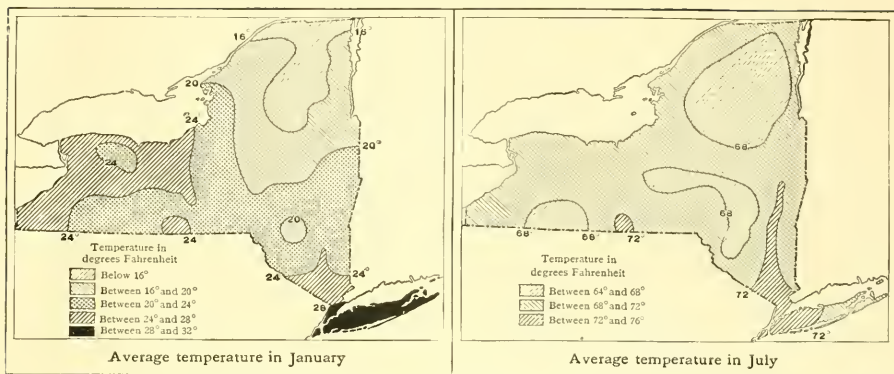
Mohawk drain large areas of the southern Adirondacks. On one of the branches, West Canada Creek, at Trenton Falls, is large water power. Power is developed on many other branches, as well as on the Mohawk itself at Little Falls and Cohoes. The Mohawk was navigated by small barges in the early days of the colony, and by means of dams and locks it is now used as a section of the Barge Canal.

The Delaware Drainage.—The Delaware River drains a large

part of the rugged and picturesque country of southeastern New York into Delaware Bay. Some of its tributaries reach far into the Catskill Mountains, where their falls and rapids add greatly to the attractiveness of summer resorts.

The Susquehanna Drainage.—The Susquehanna River drains a larger area within the state than does the Delaware. It rises in Orsego Lake, and leaves the state near the village of Waverly, reaching the sea at the head of Chesapeake Bay. Among its tributaries are Unadilla Creek and Chenango River in central New York, and the Chemung River flowing from the west.

The Allegheny Drainage.—The Allegheny River drains parts of Allegany, Cattaraugus, and Chautauqua counties in the southwestern part of the state. Its waters finally reach the Atlantic through the Ohio and Mississippi rivers and the Gulf of Mexico. Even Chautauqua Lake and its inlet streams, within a few miles of Lake Erie, belong to this drainage system.



Climate.—New York is in the track of the great cyclonic movements which cross the country from west to east. The prevailing winds are from the west, and the interior of the state has the continental type of climate, with hot summers and cold winters.

The usual maximum temperatures in July or August are from 80° to 90°, and these, owing to the moisture in the air, or its *humidity*, give sultry and oppressive weather. More rarely 95° or above marks the summer maximum.

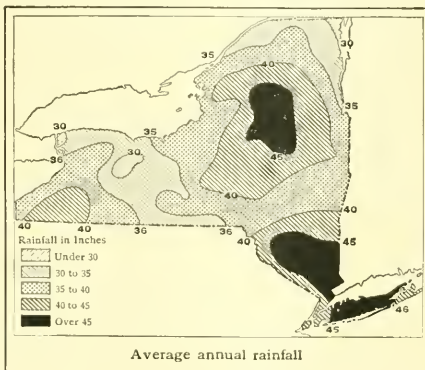
Throughout the interior of the state, the ground usually has a cover of snow during the winter months. Along the Atlantic coast snows are less frequent, but are occasionally very heavy. In the higher plateau regions, temperatures of 20° or 30° below zero may occur once or more during the winter. In the Adirondacks, records of 40° or 50° below zero are to be expected. In western New York along the Great Lakes, and in southern New York by the sea, the extremes are

more moderate, but the temperatures ranging from 20° down to the zero point are severe on account of the winds on the lakes and on account of the greater humidity by the seashore.

The annual rainfall varies from about 30 to about 55 inches annually according to locality. There is thus, in ordinary years, everywhere ample rainfall for crops, although in some summers there may be several weeks of serious drouth. The heaviest rains occur on the highest mountains, — the Adirondacks and Catskills. Eastern and southeastern New York have more rain than western New York, because of nearness to the sea; for the southeast and south winds of the cyclonic

storms bring moisture from the ocean.

The length of the growing period—between the last frost in spring and the first frost in fall—varies from about 130 to about 190 days in different parts of the state. The distribution of crops is much affected by the way different regions vary in temperature.



The length of the growing season, the average temperature, and the average annual rainfall combine to make Long Island, the lower Hudson Valley, and the lake country of western New York regions favorable for fruits, wheat, and corn, while the plateau is better suited to grass and oats, and the higher lands of the Catskills and Adirondacks are suitable for little besides forest.

Soils.—The soils of New York are nearly everywhere of glacial origin. In most of the Adirondack region the soil is thin, and is not of great fertility, and this combined with an unfavorable climate makes that region unproductive. The rocks under the Lake Plains, and under much of the Hudson and Mohawk valleys, are such that the soils which they form are naturally fertile. The plains were also enriched by the fine mud or silt deposited in the glacial lakes as already described. The soils of the Catskill-Allegheny Plateau are largely formed from the underlying sandstone, which produces rather poor soil. This soil, however, especially in the northern parts of the upland, was improved by the waste from the more fertile region to the north when this waste was transported southward by the ice and mingled with the poorer native soil.

Along the flood plains of the Genesee, Mohawk, Hudson, Black, and Susquehanna rivers, and many lesser streams, the finer glacial material has been moved, worked over, and deposited by the rivers. When these low flat grounds are properly drained and cultivated they produce abundant

crops. The glacial till (p. ix) also usually gives a fairly good soil.

Natural Vegetation and Forest Products.

In the Adirondacks the forest consists mainly of white pine, spruce, hemlock, and birch. As white pine is very easily worked, it has been for many years a favorite building material, and most of the mature pine has been cut. The rest of the state has a predominance of hardwood trees, mingled with a lesser number of coniferous trees. The chief hardwoods are maple, beech, ash, oak, chestnut, cherry, and hickory. Among the softer woods, basswood is widely distributed. The state owns about 2,000,000



Land reforested with white pine, Adirondacks

acres of forest in the Adirondacks and the Catskills. In both of these regions there are large estates or private parks, amounting in all to several hundred thousand acres. Other tracts are held by lumber companies.

In the less densely settled parts of the state many of the farms still have wood lots, from which the owners get material for fences, firewood, and some coarse lumber. From the sap of the hard maples the farmers make a considerable amount of maple sirup and maple sugar.

Much spruce timber is cut in the Adirondacks, whence it is carried to the convenient centers of water power on the outskirts of the region and made into wood pulp. In this industry New York has a high rank, but the total amount of lumber cut each year is much smaller than it was fifty years ago.

Through schools of forestry and by private enterprise efforts are being made to reforest some of the less valuable lands of the state.

Animal Life.—Wild life is found in its most conspicuous development in the Adirondacks. Moose and deer are protected by law. Deer may be hunted during a brief season. A single hunter is not permitted to take more than two deer. The law prohibits trapping beaver, which, notwithstanding their abundance in the days of the early fur trader, were for a time in danger of extinction. Black bears are occasionally seen, and a bounty is offered for killing wolves and panthers.

Hares, rabbits, and squirrels are common in all parts of the state, as are also muskrats and woodchucks. Foxes are not uncommon, and waterfowl and other game birds still occupy the marshes, lakes, and forests.

There is important oyster fishing off the shores of Long Island. Bluefish and clams are also taken, and shad are caught in the Hudson. In the Great Lakes and other fresh waters of the state, the trout, black bass, pickerel, whitefish, and muskellunge are among the important species. Fish hatcheries are maintained for restocking the lakes and streams with valuable kinds of fish. All these forms of wild life, and the song birds as well, are under the care of the State Conservation Commission, and game wardens have been appointed to prevent violations of the game laws.

Review.—1. What river systems are represented in New York? 2. Where do the waters of each river system enter the ocean? 3. What are the principal rivers of western New York? 4. What are the main streams in the western Adirondacks? In the northern Adirondacks? 5. For what reasons is the Mohawk Valley important?

6. What are the minimum temperatures of the plateau region? Of the Adirondack region? 7. Compare the rainfall of the coast region and of the Great Lake border.

8. How was the soil of the Lake Plains enriched? 9. How was the soil of the plateau improved? 10. Where are flood-plains?

11. What are the leading kinds of hardwood trees in New York? 12. Describe the regulations for game protection. 13. What commission has charge of these interests?

INDUSTRIES

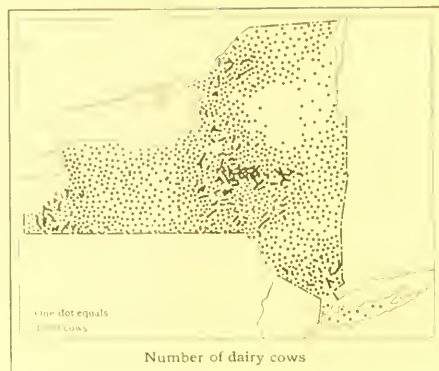
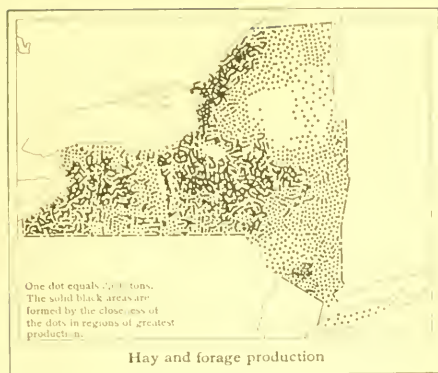
Agriculture.—When the 13th census was taken in 1910, New York stood eighth among the states of the United States in the value of all farm products. Illinois stood first, followed in order by Iowa, Texas, Ohio, Georgia, Missouri, and Kansas. The most valuable single crop in New York was hay and forage, its value being a little less than two fifths of the total value of the farm products of the state. Cereals were second in value with about one fifth of the total. Vegetables, fruits, and forest products followed in order of importance.

We have already seen that New York shows great variety in soil, altitude, tempera-



Oyster boat, Long Island Sound

ture, and rainfall. Such differences have naturally led to great differences in the kind and character of the crops raised. Wheat is confined almost entirely to western New York. Corn is well distributed over the state except in the Adirondack region, but the crop does not compare with that of the states in the corn belt, from Ohio to Kansas. Oats, being hardy, are grown more generally than corn. Of the lesser cereals, some barley and rye are raised; and New York ranks with Pennsylvania as one of the leading states in the growing of buckwheat.



Hay and forage are not only the largest crop, but in this product New York is surpassed by no state but Iowa. This large product makes possible a great dairying industry. At the census of 1910 New York had more dairy cows than any other state, being slightly in advance of Wisconsin and Iowa. The success of this industry depends upon conditions of soil and climate, and upon nearness to market. The cool uplands of the plateau region are well suited to grass. While the climate is not so favorable for ripening grain, corn can almost everywhere be brought to a state of maturity suitable for silage. In this form it serves as a nourishing food for great numbers of cattle throughout the winter months when other green food is not available.

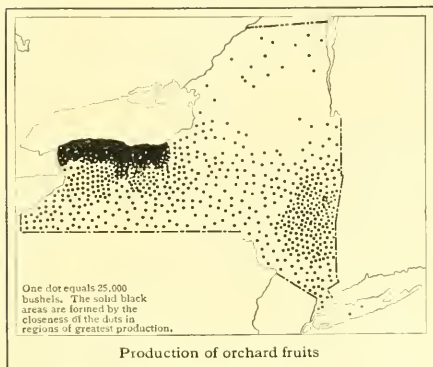
As nearly three fourths of the ten millions of people in New York state live in cities and large villages (census of 1915), they require enormous supplies of dairy products. Railroads whose trains carry fresh milk and cream to the city of New York extend through all central New York to Lake Ontario, and far into western and northern New York. Throughout these dairying regions the farmers may be seen early in the morning carrying the milk to some near-by milk station, where it is cooled and then shipped in refrigerator cars to New York or some other city.

In nearly every dairy district, but more especially in regions at some distance from the larger cities, creameries and cheese factories abound. This is true of the high plateau region of southwestern New York, and of the belt of lowland between the Adirondacks and the Canadian boundary. Various factories are devoted to the manufacture of condensed milk, milk powder, and other dairy products.

In recent years much attention has been given to rearing the best breeds of stock, and both state and federal authorities prevent as far as possible the spread of tuberculosis among cattle. Animals affected by the foot and mouth disease are slaughtered and buried to prevent the spread of that dreaded plague.

In the rearing of sheep and swine New York does not take high rank. In the value of poultry, however, the census figures show that New York was exceeded by only five states. Here, as in dairying, however, the trade is chiefly local, as the cities make large demands.

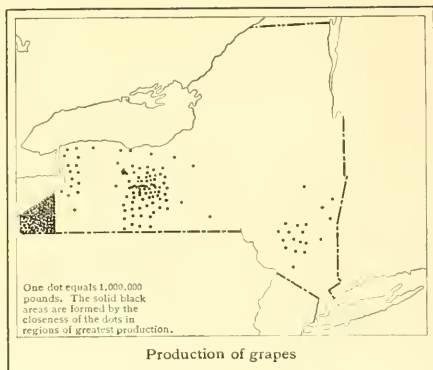
In the production of fruits New York is second only to California. Small fruits are grown in all parts of the state except the Adirondacks, the Catskills, and the plateau of southwestern New York. Orchard fruits are raised everywhere in the state except in the central Adirondacks. They are especially



abundant on the Lake Plains of western New York and in the Hudson Valley. South of Lake Ontario is a belt of apple, pear, and peach orchards, unequaled in any other part of our country. New York has regions well fitted in climate and soil for the raising of grapes. Chief of these is the Chautauqua "grape belt," bordering Lake Erie in the southwest corner of the state and extending into Pennsylvania. In this region many grapes are used in the manufacture of fermented grape juice. Next is the Finger Lake region, particularly about Lake Keuka, and centering in the region around Hammondsport. In this district there is a large grape juice industry. Some grapes are raised also in the Hudson Valley.

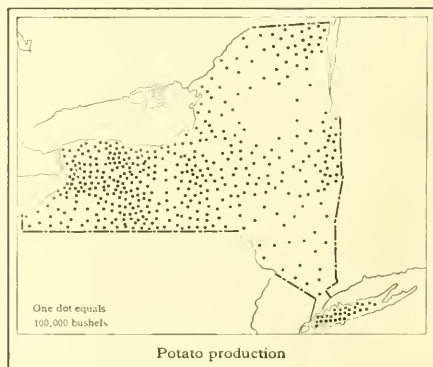
New York is the leading state in the production of potatoes. Western New York and Long Island are the regions of the largest potato production. Miscellaneous vegetables are also important, especially in Long Island, where large quantities are grown for the New York market, and in Monroe and Erie counties, for the supply of Rochester and Buffalo. Large crops of onions are raised in Orange, Wayne, and Madison counties. The canning of fruits and vegetables has also become an important industry.

Among special crops may be named the hops grown in central New York, mainly in



Otsego, Schoharie, Oneida, Madison, and Montgomery counties. Peas and beans are raised mainly in northern and western New York, and in the counties bordering Lake Ontario and the Finger Lakes. Some tobacco is raised in central and southern New York; Onondaga and Chemung are the leading counties in that crop. Hothouse and nursery products are grown in and near the greater cities, and the nursery farms about Rochester, Geneva, and Dansville are among the most extensive in the United States.

Review.—1. What is the rank of New York in farm products? 2. What state rivals New York in producing hay and forage? 3. How are dairy supplies furnished to the city of New York?



4. Where are creameries and cheese factories numerous? 5. What regions in the state raise much orchard fruit? 6. What regions of New York are favorable for grapes? 7. In what parts of the state are hops grown? Peas and beans? Tobacco? Nursery products?

Water Resources. When the population of a country increases, well waters are in danger of pollution, and the wells are gradually abandoned. As a result all the large cities and villages of the state, and many smaller ones, now have public water supply. In order to supply water for the city of New York immense dams and reservoirs were constructed in Westchester and Ulster counties, many miles from the great city. Some cities and villages draw their water supply from large streams, but many rivers have become impure through sewage and the waste from manufacturing plants. City water supplies, therefore, are generally drawn from lakes, or from reservoirs fed by small streams in forests or farming districts, where all possible safeguards against pollution have been taken. Thus the city of Utica receives water from reservoirs in the neighboring hills, and from the West Canada Creek, an Adirondack stream; Syracuse derives its supply from Skaneateles Lake, Rochester from Hemlock Lake, and Buffalo from Lake Erie at the head of the Niagara River.

Few states are so well provided with water power as New York. The greatest single water power in the state is at Niagara Falls, where several plants are situated. Here electric power is developed on a large scale,

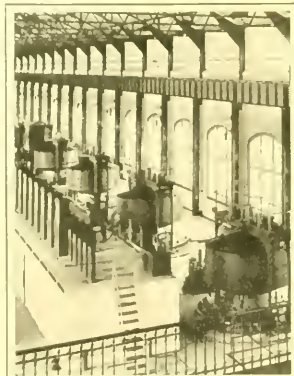


Steam tree digger in a nursery at Dansville

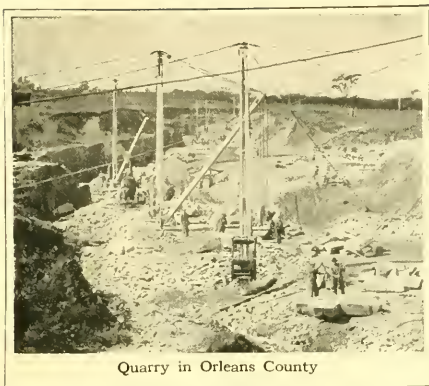
and transmitted to Buffalo and to other cities and villages. The waters of the Genesee River at Rochester have long been used for power. Throughout the plateau and Finger Lake region many waterfalls are suited to this purpose, and many streams flowing from the Adirondack region provide power for large mills and factories.

Mineral Resources.—Of the mineral resources of the state, the most widely distributed are the building stones. Granite is quarried in the Highlands of the Hudson, in some parts of the Adirondacks, and on Grindstone Island in the St. Lawrence River.

Limestone is found in the Hudson and Mohawk valleys, near Trenton Falls, at Oriskany Falls, in the hills south of Syracuse, and in the vicinity of Lockport, Niagara Falls, and Buffalo. Several public buildings in Syracuse are constructed of Onondaga limestone. Marble, which is a changed limestone, is quarried at Gouverneur in St. Lawrence County, and at Tuckahoe, near the city of New York. Much ordinary limestone is "burned," that is, it is highly



Dynamos in a Niagara power plant



Quarry in Orleans County

heated and changed into quicklime. A certain kind of limestone is called hydraulic limestone because when burned and ground it becomes a cement that "sets" under water. Limestone of this kind is quarried near Kingston and near Syracuse.

Sandstone occurs in many parts of the state. The Potsdam sandstone of northern New York is a very hard, reddish rock, and a valuable building stone. The Medina sandstone, quarried in Orleans County, is a brownstone used as a building stone and for paving blocks. Another sandstone used in building is the bluestone of western New York and of Chenango and neighboring counties. The flagstone of Ulster, Delaware, and Greene counties is quarried in large, thin slabs for various uses. A coarser rock of the same nature, called conglomerate or grit, is quarried in Ulster County.

In Washington County, as in the neighboring part of Vermont, slate is quarried and is used for roofing and ornamental work, and for school blackboards.

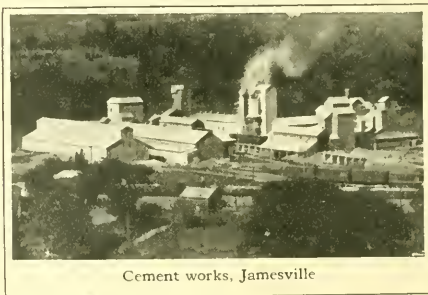
Portland cement is made of limestone and clay. The clay may be taken from unconsolidated clay beds of glacial origin, or from more ancient clay rocks, known as shales. This manufactured cement has largely taken

the place of the natural limestone cement, and plants for its manufacture are found at several points, as on Cayuga Lake near Ithaca, at Jamesville near Syracuse, at Howe Cave in Schoharie County, and at Hudson and Catskill.

Clay is used in many parts of the state for making brick, drain tile, and sewer pipe. The largest beds are along the Hudson, and in this valley there has grown up one of the greatest brick-making industries in the world. The bricks are readily transported in scows to New York and other cities.

Gypsum occurs in Cayuga County and in some other parts of central and western New York. It is used for fertilizer and for making wall plaster.

New York is one of the most important states in the production of salt. Before the coming of the white man, the Iroquois Indians found salt springs where Syracuse now is, and they made salt by evaporating the brine. In 1880, a boring in western New York revealed the fact that there are beds of rock salt far below the surface. These beds are now reached by wells, into which water is poured to dissolve the salt. The brine is then pumped out and the water is evaporated to



Cement works, Jamesville

secure the salt. Shafts have also been sunk, so that the salt may be mined in blocks. Silver Springs, Warsaw, Retsof, Cuylerville, Watkins, and Ithaca are localities known for the salt industry.

The city of Olean is in the midst of a petroleum region which extends into New York from the larger oil fields of western Pennsylvania. Thousands of petroleum wells have been bored in Cattaraugus and Allegany counties, and this region still continues to furnish a considerable amount of oil. Related to petroleum is natural gas, which occurs in paying quantities in the oil region, also in several other counties of western and central New York.



Clothing factory, Rochester

Graphite is mined near Lake George, and much talc, used with pulp in making paper, is found in St. Lawrence County.

There are important deposits of magnetite, a pure kind of iron ore, in the eastern Adirondacks on the borders of Lake Champlain. Red hematite, another iron ore, is found in Oneida and Wayne counties; some of it is ground for making a coarse kind of red paint.

Review.—1. Why do cities seek water supply from lakes and the headwaters of rivers? 2. Describe the largest water power in the state. 3. What other regions have much water power? 4. Where is granite found? Sandstone? Marble? Slate? 5. Where are the largest clay deposits in the state? 6. What use is made of this clay? 7. By what methods is salt obtained? 8. What part of the state produces petroleum? Natural gas? 9. Where are deposits of iron ore found?

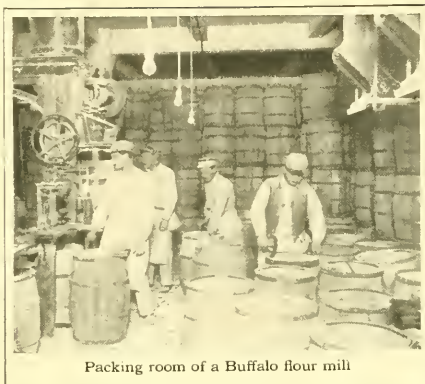
Manufacture. The total value of all manufactures in the state of New York, at the census of 1914, was nearly four billion dollars. No other state reached this figure. In like manner the city of New York led all other cities, producing a value of more than two billion dollars.

New York has been the first state in the value of its manufactures since 1825, the date of the opening of the Eric Canal. Through

the completion of this great transportation route, the population of the state grew rapidly, the farm produce was increased, the cities were enlarged, and business and commerce centered more and more in the Empire State, and in its greatest city. Of 265 kinds of manufactures on which the United States census makes reports, 243 are represented in this state, and 217 in the city of New York.

New York stands first not only in total value but also in a number of special kinds of manufactured goods. Among these is men's clothing, in which the product is more than twice that of any other state; also women's clothing, with about nine times the value of that of any other state. The state also leads in printing and book making, baking products, sugar refining, tobacco manufactures, millinery goods, fur goods, pianos and organs, confectionery, copper, tin, and sheet iron products, paint and varnish, patent medicines, and many other manufactures. In all the industries named in this paragraph, the city of New York is far in the lead among the cities of the state and of the country.

Among the other important manufactures in which the state leads, are hosiery and knit goods, paper, chemicals, electrical machinery and supplies, and carpets and rugs.



Packing room of a Buffalo flour mill

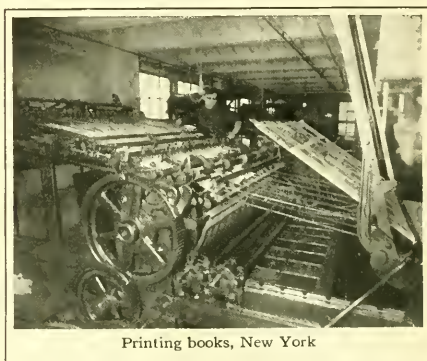
New York state is second to Minnesota in flour and gristmill products. Although it is far from the great grain fields of the west, the railways and the ships on the Great Lakes bring enough grain to the New York mills to make this possible. As the greater number of people live in the east, the largest markets are in the east, and there is sometimes economy in bringing the grain near to the market where flour is in demand, before it is manufactured.

In like manner, New York ranks next to Illinois and Kansas in meat packing, although the state produces but few of the cattle and swine that supply its meat-packing establishments. In this industry, the city of New York ranks next after Chicago and Kansas City. New York state also ranks high in the production of butter, cheese, and condensed milk, reaching more than half the product of Wisconsin, the leading state. In foundry and machine shop products the state of New York is second to Pennsylvania and Ohio, and the city is next to Chicago. The state takes third place in the manufacture of automobiles, and second in that of boots and shoes.

The five leading industries of New York, both state and city, are: women's clothing, men's clothing, printing and publishing, foundry and machine-shop products, and

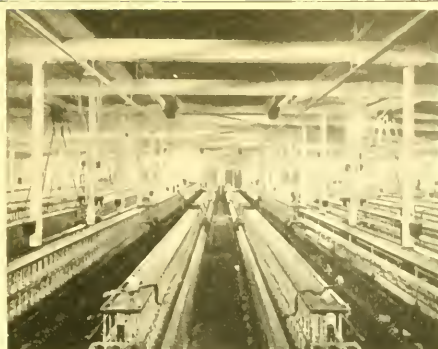
slaughtering and meat packing. No one of these industries falls below \$100,000,000 in the state, and the two clothing industries taken together produce an annual value of nearly \$600,000,000. The only industry of these five for which the state affords much raw material is printing and publishing. The material is largely paper, and a very large share of the newspaper stock is manufactured in the pulp and paper mills of the Adirondack region.

For the other four industries the state provides little material. The clothing industries use cotton, wool, flax, and silk goods as well as furs, feathers, and a variety of metallic and other substances for buttons, buckles, and various ornaments. Practically all of these materials come from other states or other countries. In like manner, most of the



Printing books, New York

animals which are the raw material of meat packing are brought from states farther west. Most of the iron and steel also, for foundry and machine-shop work, is made in Pennsylvania and other states, the principal exception being the product of furnaces near Buffalo and in the region about Lake Champlain. Thus it is not the presence of raw materials, but facilities for transportation and for marketing the products, that have developed the largest of New York's manufacturing industries.



Knit goods factory, Cohoes



Packing room of a collar factory, Troy

The clothing product of New York is nearly one half of the total for the United States. This means that the state not only clothes most of its own people, but its marketing facilities enable it to supply the people of many other states. In the same manner, the machine shops take the steel from other states, make agricultural implements, typewriters, gas machines, gas and water meters, hardware, iron pipe, plumbers' supplies, heating apparatus, structural iron, and many other things, and sell them in all the markets of the world.

Another example of raw material brought to New York for manufacture is lumber. New York formerly cut much lumber from its forests, but the supply has decreased, and at the present time about twenty states draw a larger product from their forests than does New York. But this state, nevertheless, supplies three fifths as much as Washington, the leading state in this industry, in the value of the things made out of lumber.

A further case of this kind is found in the grinding of corn, buckwheat, and oats. Of these three grains, New York leads only in the production of buckwheat, and is eleventh in the raising of oats, and twenty-fifth in the growing of corn. Yet she holds first place in milling all three.

Several manufacturing industries of New York are localized or concentrated in a single city, or a group of neighboring cities. Nearly one third of the hosiery and knit goods, including knit undergarments, hose, sweaters, knit gloves and mittens, hoods, and scarfs, produced in this country, are made in the state of New York. Cohoes is the center of this industry, where it began in 1832, with the invention by a local manufacturer of a power knitting machine. The falls of the Mohawk at that place have furnished the necessary power. Other large mills are found at Amsterdam, Little Falls, Utica, and other cities and villages in the Mohawk Valley.

The making of collars, cuffs, and shirts is localized in the city of Troy, which now makes about nine tenths of all the goods of this kind made in our country. Glens Falls is also a center for this industry. As in the case of knit goods, the raw materials must all be imported, and there is no geographic reason why these special industries should have developed in these particular localities. A favorable start was made many years ago, skilled labor developed, markets were established, such places as Cohoes and Troy gained a reputation for their products, and the business has thus centered itself more and more in these cities.

The same influences led to the location and development of the leather glove and mitten industry. New York makes about 60 per cent of the product in the country. Fulton County has about two fifths of the glove factories of the United States and makes more than half the gloves and mittens, on the basis of value. The industry is centered mainly in the two neighboring cities of Gloversville and

Johnstown, in which the making of gloves and mittens is the chief industry. The skins must all be brought from remote regions, and the coal for power is brought from Pennsylvania. Much of the labor, however, is hand labor, and these cities are known everywhere for the quality of the work.

Many industries are concentrated in the city of New York. For example, this city produces about 60 per cent of the country's millinery and lace goods, and 70 per cent of the country's fur goods and women's clothing. The refining of sugar is a large industry in the borough of Brooklyn, as is also the roasting and grinding of spices and coffee.

Among manufacturing industries which are based on raw materials produced in the state,

the making of butter and cheese has been studied under the head of Agriculture. Another kind of manufacture which uses

home products is canning and preserving. There are nearly 800 establishments of this kind in New York. Canning fresh vegetables and fruits, and making pickles, preserves, and sauces. Beans, corn, peas, pumpkins, squashes, and tomatoes are the chief vegetables used.

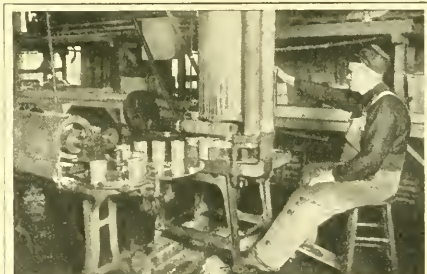
and the fruits consist of apples, pears, peaches, plums, cherries, and berries.



Sewing room in a glove factory, Gloversville

Review.—1. Give the value of manufactures in the state, according to the last census. 2. Name several kinds of manufactures in which the state stood first; several in which the city of New York stood first. 3. What five manufacturing industries each put out products exceeding in value \$100,000,000? 4. How does New York rank in the production of lumber, and in the manufacture of lumber? 5. Give an account of the concentration of the knit-goods industry. 6. What are the centers of glove making? 7. What industry is concentrated in Troy? What industries in the city of New York?

Transportation Routes.—The most important route in the state leads from the city of New York up the Hudson River to Albany, westward to Schenectady on the Mohawk River, through the Mohawk Valley to Utica and Rome, and across the Lake Plains to Niagara and Buffalo. In this distance of about 450 miles from the ocean to the lakes, the only considerable railroad grade is found for a short distance west of Albany. The divide between the Mohawk and Ontario basins is passed at Rome, at an altitude of about 450 feet. This route is followed by the New York Central lines, by the Erie branch of the New York State Barge Canal, and by a series of state roads.



Canning factory, Canastota. Filling cans with corn

In the early days people and goods were transported up the Hudson by boats. The goods were then carried across the divide between Albany and Schenectady on the Mohawk River. Thence the passage was by boat up the river to the Oneida Carrying Place, where Rome now is. More than a hundred years ago, settlers passed into central and western New York by this route. From the carrying place at Rome, boats were again used down Wood Creek, and through the Oneida and Oswego rivers to Oswego. From the junction of the Oneida and Seneca rivers the route by the Seneca River led westward to Auburn, Geneva, and Canandaigua.

Very early in the history of the state a small canal, equipped with locks, was dug to avoid the rapids at Little Falls. A canal was also dug at the Oneida Carrying Place, and a highway beginning by the Mohawk River at Utica, known as the Genesee Road, was built through the forest, westward to Auburn and Geneva. Over this road a multitude of settlers went into western New York and on to Ohio.

The long journey by boat on the rivers, or by wagon on new roads, made traffic between western New York and the Hudson Valley tedious and expensive. Farmers could not afford to send their grain and fruit to Albany and New York, where it was needed, and there arose an agitation in favor of a canal to join Lake Erie and the Hudson River. The project was taken up by De Witt Clinton, governor of New York, and in 1817 the work began near Rome. The canal was completed in 1825. Navigation was begun with an elaborate celebration, and the event was for that time quite as important as the opening of a transcontinental railway to-day.

As a consequence, the produce of western New York could be profitably marketed in the east, and settlers rushed westward to take



Railroad in the Chemung Valley, near Corning

advantage of rich and cheap lands, and to build new homes in western New York, in Ohio, and on the western prairies.

Later, a railway was built from Albany to Schenectady,—the first in the state,—and still later sections were completed between Schenectady and Utica, between Syracuse and Auburn, between Utica and Syracuse, and finally, by the addition of other links, a series of roads joined the city of New York and Buffalo. These roads were made into one system—the New York Central—in 1869.

Some years afterward the West Shore Railroad was built, and as it was finally leased by the New York Central Lines, the last-named system now has four tracks leading from New York to Albany, and six from Albany to Buffalo.

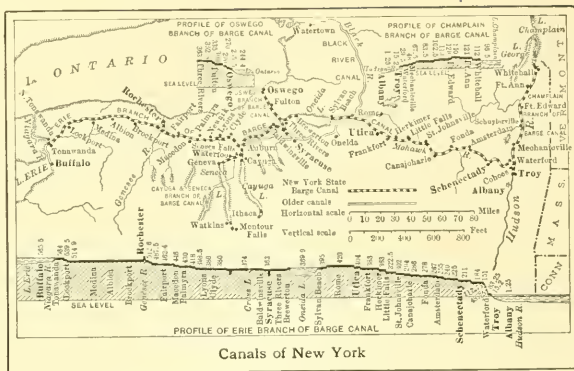
Other trunk railways, running for long distances through our state, extend from the city of New York westward. One of the first railroads of New York was the New York Lake Erie and Western, passing through Port Jervis, Binghamton, Elmira, and Hornell, to Dunkirk and the west, and from Hornell over the Portage Gorge of the Genesee River to Buffalo. The Delaware Lackawanna and Western Railroad, entering the state from Pennsylvania, extends from Binghamton to Utica, from Binghamton to Syracuse and

Oswego, and from Binghamton to Buffalo. The New York Ontario and Western Railway crosses mountain and plateau from New York, by way of the cities of Middletown, Norwich, and Oneida, connecting at Oswego with the Rome Watertown and Ogdensburg division of the New York Central Lines, for the west and north. The Lehigh Valley and Pennsylvania railroads run across central and western New York to ports on Lake Erie and Lake Ontario. All the railroads above described, except the New York Central Lines, carry immense amounts of coal into New York and to lake ports for Canada.

The Erie and the Delaware Lackawanna and Western railroads take advantage of the Susquehanna and Chemung valleys, which offer a great east and west route in southern New York. Between this route and that of the New York Central Lines, many valleys cut through the plateau in a north and south direction. Many of these valleys are utilized by railroads, including the Unadilla, Chenango, Cayuga, Seneca, and Genesee valleys.

Another great natural route extends up the Hudson Valley, across the divide near Fort Edward and through the Champlain Valley to Montreal. This route from Albany, Troy, and Schenectady northward is followed by the Delaware and Hudson Railroad, which also reaches from Albany to Binghamton, and to the coal district of northeastern Pennsylvania. Several branches of the New York Central Lines serve the region west and north of the Adirondacks, and several railroads penetrate the Adirondack region.

After the Erie Canal was finished, several other canals were constructed, but some of them were later abandoned. A canal that is still maintained connects Rome with the



Black River Valley, by way of Boonville. The other canals still maintained by the state have been enlarged or reconstructed as parts of the Barge Canal system.

The New York State Barge Canal is by far the largest and most important piece of canal construction ever undertaken by any state. The navigable waterways thus provided are approximately 540 miles in length, and large and deep enough for barges of 1000 tons each. Several lakes, and several canalized rivers, are included in the system, as shown by the map above. On the map, trace routes from Troy to Buffalo, and to Whitehall; from Oswego to Syracuse, to Ithaca, and to Watkins.

During recent years the state has built many good roads, joining the larger cities and villages, and furnishing outlets for the produce of the farmers. The need of good roads for rural delivery of mails, and for automobile traffic, has been influential in developing this form of transportation facilities.

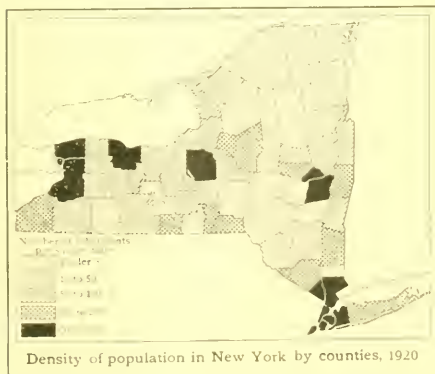
Electric railways have also been extensively built in recent years, not only for the convenience of cities and their suburbs, but as interurban roads which join many of the larger cities and towns of the state. These roads are most largely developed between Albany and Buffalo, as parallels to sections of the New York Central Lines.

The city of New York stands as the western terminus of the most traveled of all ocean routes between the United States and Europe. It is also one of the principal ports for the extensive coasting traffic which follows our shores from Maine to the Gulf of Mexico. Buffalo is the eastern terminus of much of the Great Lake traffic, and there is local traffic on Lake Ontario from Oswego, Rochester, and other New York ports, to Toronto and Kingston in Canada.

Review.—1. What is the leading transportation route in the state? 2. What large cities are on this route? 3. How was Mohawk navigation first improved? 4. Where was the Genesee Road? 5. Give an account of the making of the Erie Canal. 6. When was the first railway built in the state? What points did it join? 7. Give the names and routes of the trunk railroads leading westward through the state. 8. What canals are included in the Barge Canal system? 9. Give an account of the extension of good roads. 10. What is the importance of Buffalo, in Great Lake traffic?

POPULATION

Distribution of Population.—At the time of the United States Census of 1920 the population of New York averaged 211 persons for each square mile. Only four other states have a greater density of population than this; namely, Rhode Island, Massachusetts, New Jersey, and Connecticut.

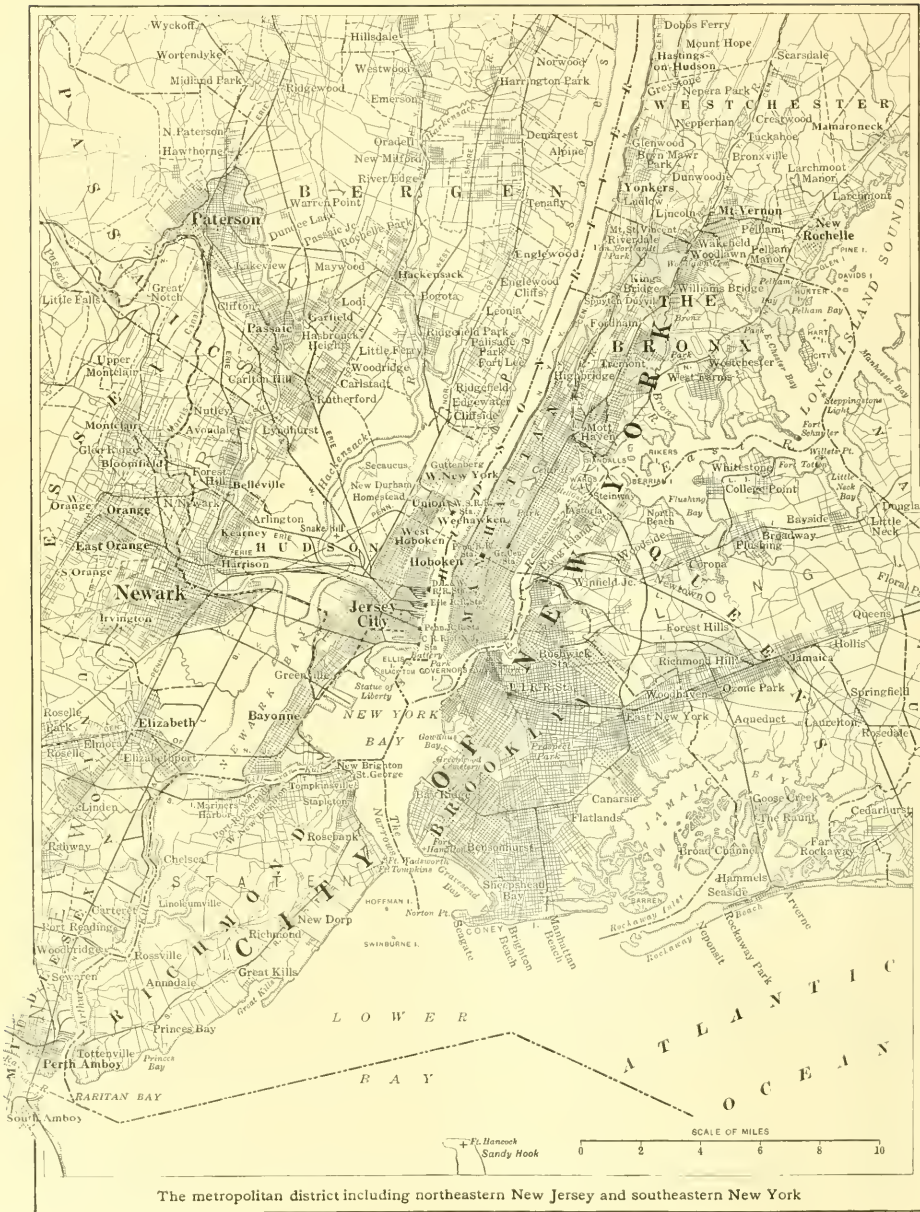


The map on this page gives the density of population by counties. The regions having a density of 100 or more include all the counties from Orange to the eastern end of Long Island. Each of the other counties of this density, such as Onondaga, Monroe, and Erie, contains one or more large cities and villages. The only county that averages less than 3 people per square mile is Hamilton, which is wholly in the Adirondack region of mountains and forest. In northern New York, adjoining or near Hamilton County, several counties, Warren, Essex, Clinton, Franklin, St. Lawrence, Lewis, and Herkimer, have each a density between 17 and 44. Every one of these counties has some rich lands and flourishing villages, but each also extends over large areas of Adirondack forest. Similar densities are found in Allegany, Schuyler, Chenango, Delaware, Schoharie, and Sullivan counties, which have few large villages and whose uplands are largely devoted to the dairying industry. Intermediate in density, 50 to 100, are counties having rich farms, with some large villages and small cities. Examples in this group are Jefferson, Wayne, Orleans, Genesee, Steuben, Madison, Ontario, and Ulster counties.

On the whole, the densest populations of New York are on Long Island, in the Hudson and Mohawk valleys, on the Lake Plains, and on the flood plains of the Susquehanna and Chemung rivers. In other words, the regions of lower altitude and milder climate, of rich soils and good transportation facilities, support the most people.

The cities and large villages are growing in population faster than the country districts. At the time of the 1920 census 82.7 per cent of all the people of the state lived in cities or in villages having a population of 2500 or more.

The state, in 1910, had about 2,750,000 inhabitants who were born in foreign lands, or somewhat more than one fourth of the whole population. Most of the foreign-born live in the cities.



The metropolitan district including northeastern New Jersey and southeastern New York

Rural counties such as Allegany, Steuben, Cortland, Chenango, and Greene have from 5 to 10 per cent of foreign-born, in comparison with New York, Monroe, and Erie, in which there are 35 to 60 per cent.

The total population of New York in 1900 was 7,268,894. In 1910 it was 9,113,614, showing an increase of nearly two million. The population in 1920, according to the census of that year, was 10,384,829.

Cities.—Fifty-nine centers of population are incorporated as cities. These range in population from less than 5000 to 5,000,000. Only six fall below a population of 10,000. Six exceed 100,000, and eleven have more than 50,000 people. Some places of 10,000 to 15,000 population retain the village form of government; namely, Ossining, Peekskill, and Port Chester. The sections following give information concerning the cities of the state, and also concerning many of the larger villages.

City of New York.—Founded as New Amsterdam by the Dutch colonists, the settlement was at first a small village at the south end of Manhattan Island, in the vicinity of the present Battery Park. At the close of the nineteenth century, the city covered all Manhattan Island, and extended into the mainland. Brooklyn had been added to the greater city in 1898, as had also some other parts of Long Island, and the whole of Staten Island. Thus "Greater New York" consists of five boroughs, Manhattan, Brooklyn, Queens, Richmond, and the Bronx. It includes a land area of about 300 square miles and from north to south extends more than thirty miles.

The borough of Manhattan consists of Manhattan Island and a few small islands in the adjacent waters. Manhattan Island is $13\frac{1}{2}$ miles long, and its greatest width is $2\frac{1}{4}$ miles. It rises to an altitude of 238 feet, at Washington Heights in the north, and consists mainly of ancient hard rocks, which have made expensive excavations necessary

in establishing street grades and providing for basements and subways.

On the west of Manhattan Island is the Hudson, often called locally the North River. On the south is New York Bay, on the east is the East River, a strait joining New York Bay and Long Island Sound, and on the north are other straits called Harlem River and Spuyten Duyvil Creek. All these are tidal waters, so that the entire border of the island is reached by ships of greater or less draught. The largest ships dock on the west side of the island and on the New Jersey side of the Hudson. This vast network of tidal waters, well protected from violent storms, affords one of the finest harbors in the world. Not only are harbor facilities most unusual, but the tidal waters extend up the Hudson 150 miles, to Troy, and many large passenger and freight steamers make use of this great natural highway. A little beyond Albany the Mohawk Valley affords an open route to the west. New York therefore stands at a gateway of the rich interior of the United States, while on the east the Atlantic Ocean furnishes a highway to the great commercial nations of Europe. This admirable location is the chief reason for New York's great growth and its vast industries and commerce.

As old New York was in the southern part of Manhattan, it is there, as in many old cities, that we find the greatest congestion, with somewhat narrow, irregular streets. The entire central and northern parts of the borough are laid out in quadrangular blocks, with the avenues running nearly north and south, and numbered streets crossing at right angles, from the East River to the Hudson River. The great artery of traffic is Broadway, which runs northward from Battery Park, cutting diagonally several of the avenues. It is the best-known city street in the Western Hemisphere, and is bordered by business houses, churches, hotels, theaters, apartment houses, and residences.



Skyscrapers of lower Manhattan, as seen from a tower of Brooklyn Bridge

© Brown Bros.

Lower Broadway has many tall office buildings, or "skyscrapers," in which are found the offices of great corporations and of many lawyers. Running east from this part of Broadway is Wall Street, on which are the New York Stock Exchange, the United States Subtreasury, and some of the largest banks and other financial houses. Many parts of lower Manhattan are occupied by wholesale houses and by factories. Establishments for particular kinds of goods, such as leather, hardware, or jewelry, gather in groups in certain districts. The retail trades extend from about Eighth Street northward toward Central Park, on Broadway, Fifth Avenue, and Sixth Avenue, and the streets that cross these. In recent years some large business houses have removed from Sixth Avenue and Broadway to Fifth Avenue, in which business is gradually displacing fine residences as far north as Central Park. The great residence districts now are about Central Park, on both the east and the west side, and farther north on the streets lying near the Hudson River.

On either side of the retail business section, particularly on the "East Side," great numbers of people live in apartments. Here many foreign-born from almost all countries of the world have made their home.

On or near Broadway, between Thirtieth Street and Fiftieth Street, are many of the

chief theaters and larger hotels of the city. Among the leading public institutions are the City Library at Fifth Avenue and Forty-second Street, the Metropolitan Museum of Art and the American Museum of Natural History, both in Central Park, and the Botanical and Zoölogical gardens, which are in the borough of the Bronx. The city is well equipped with schools and colleges, and is the seat of three great universities, Columbia in Manhattan, Fordham in the Bronx, and New York University with colleges in both boroughs.

Since many of the people of New York live in apartment houses, five, ten, or even fifteen stories high, there is great need of public parks, of which there are about fifty. Chief of these in Manhattan is Central Park, extending north from Fifty-ninth Street about $2\frac{1}{2}$ miles. Other large parks are Prospect Park in Brooklyn, and Van Cortlandt, Bronx, and Pelham Bay Parks in the Bronx. The smaller parks, however, are of great service because accessible to the homes of the poor, who find in them rest, pure air, and sunshine.

New York is the greatest manufacturing city in the world. Its chief industries have been described under the head of Manufacture. As measured in value of products about two thirds of the manufacturing industries of the city are located in the borough of Manhattan.

The borough of Brooklyn lies across the East River from lower Manhattan and is a vast city in itself. It has large commerce and great manufacturing establishments, and here many people who carry on business in Manhattan have their homes. The same is true of the borough of Queens, which takes in Long Island City and other centers of population. The borough of Richmond includes the whole of Staten Island, and therefore includes much land still used for farms and gardens. The Bronx also is in the main a residential section for people who carry on business in Manhattan; but it has some piano and other factories of its own.

As has already been pointed out, the more important business, theater, and factory districts of the great city are in the lower and middle parts of the long and narrow Manhattan Island. There each business day an enormous number of people are at work, most of whom live in the northern and middle parts of the island, in the other boroughs, or in the near-by villages of New York and New Jersey. During the day and evening other thousands visit the trade and theater districts of Manhattan on business or for pleasure. The problem of moving hundreds of thousands of people into and out of the city and from place to place within its limits is one of great difficulty. In the rush hours just before the opening of the business day every passenger route leading into the business district is crowded to the utmost. At the close of the business day it is the trains, cars, and ferries moving away from the business district that are overcrowded.

In the borough of Manhattan the chief lines of transportation run north and south. These include (1) many lines of surface electric cars running on Broadway and the avenues, with numerous cross-town lines, (2) elevated

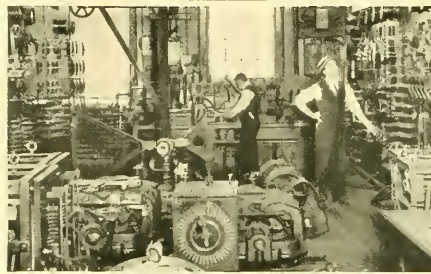


A ferryboat in New York harbor

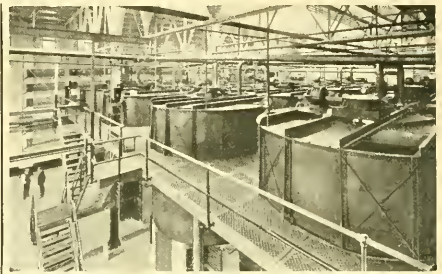
railways built above the level of the street and supported on great iron trestles, and (3) a system of subways where the railway tracks are laid under the streets. A part of the subway system is still under construction. The subways connect by tunnels under the river beds with New Jersey and with the borough of Brooklyn; and by a bridge and a tunnel with the Bronx. There are elevated railways also in the boroughs of Brooklyn, Queens, and the Bronx, connecting with Manhattan.

The surface cars will pick up or leave passengers at any street corner on signal, but on the elevated railroads and the subways there are regular passenger stations. On all of the railway lines entering the city there are numerous suburban trains. Passengers on these trains are carried to and from the stations within the city or on the New Jersey shore. From the New Jersey terminals passengers may reach Manhattan by ferry or by tunnel.

The chief lines handling this suburban traffic are the Long Island Railroad, the New York New Haven and Hartford Railroad, the New York Central and Hudson River Railroad, the Pennsylvania Railroad, the Erie Railroad, the Delaware Lackawanna and Western Railroad, the Lehigh Valley Railroad, the Baltimore and Ohio, and the New



Testing electrical machinery, elevator works, Yonkers



Souring tanks in the yeast factory, Peekskill

York Ontario and Western Railway. The Long Island Railroad runs suburban trains to the boroughs, cities, and villages of Long Island. The New York New Haven and Hartford and the New York Central conduct most of the suburban traffic of southern New York and Connecticut. The other lines have a large traffic between New York and the cities and villages of northern New Jersey.

Two railway stations on Manhattan Island are of enormous size, magnificent construction, and cost millions of dollars each. These are the Grand Central on East Forty-second Street, and the Pennsylvania Station at Thirty-second Street and Seventh Avenue. The Pennsylvania trains reach that station by a tunnel under the Hudson River. There is a tunnel under the East River, so that all Long Island is joined to the mainland in its railway connections, and the trains on this line use the Pennsylvania station.

Several bridges, including the earliest or Brooklyn Bridge, now extend across East River. Steamboats and electric cars carry great numbers of excursionists to resorts on Long Island, and to places on the New Jersey shore. Regular lines of steamers, in the ice-free season, ply the Hudson River to Albany and Troy and intermediate cities.

North and northeast of the city of New York are **Yonkers**, **Mt. Vernon**, **White Plains**, **New Rochelle**, **Mamaroneck**, **Rye**, and **Port Chester**. East of New York are **Glen Cove**,

Rockville Center, **Hempstead**, and **Freeport**. Many people who live in these and other suburbs carry on business in New York.

Cities and Villages of the Hudson Valley.—Adjoining New York, on the east bank of the Hudson, is **Yonkers**. In population this city is the sixth in the state. Many of its residents work in the metropolis, but it is also a manufacturing city. In its factories, carpets, rugs, and fur felt hats are made. It has great sugar refineries, machine shops, elevator works, and factories for rubber goods.

Smaller communities, as we go north on the east side of the Hudson, are: **Hastings-on-Hudson**; **Irvington**, once the home of Washington Irving, the author; and **Tarrytown**, scene of Irving's *Legend of Sleepy Hollow*, where there are several private schools. At **Ossining** is Sing Sing prison, the largest institution of the kind in the state. **Peekskill** village is larger than many of our cities, and is a center of schools and of manufacturing industries.

On the west side of the river opposite Tarrytown is **Nyack**. A little farther north is **Haverstraw**, near which there are extensive beds of clay used in making bricks. Here are made many of the bricks used in the buildings of Greater New York.

In the Highlands, at West Point on the west side of the gorge of the Hudson, is the United States Military Academy. **Newburgh**,



The water front of Albany. The Capitol is at the center of the picture

a few miles north of the Highlands, was the headquarters of the American army during a part of the Revolutionary War. Its industries include the making of men's clothing, lawn mowers, and boats. **Beacon** is a manufacturing city on the east bank of the Hudson. **Poughkeepsie**, farther north, is the seat of Vassar College, one of the oldest and largest of colleges for women. In Poughkeepsie are factories for making horseshoes and dairy, poultry, and apiary supplies. At this point there is a railroad bridge across the Hudson, the only bridge crossing the river below Albany.

Kingston is on the west bank of the Hudson, where the Walkill River joins the larger stream. Through the Walkill Valley, Penn-



Main building, Vassar College

sylvania coal is brought to the cities and villages of the Hudson Valley. Kingston is a point of departure for Catskill Mountain tourists. In the Walkill Valley is **Middletown**, with car shops and manufactures of leather goods and condensed milk. **Walden** also is in the Walkill Valley. On the west

bank of the Hudson are **Saugerties** and **Catskill**. From the latter place a railway enters the Catskill Mountain region.

Hudson, on the east side of the river, is a center for knit goods, and at this point a branch of the Boston and Albany Railroad reaches the Hudson.

On both banks of the Hudson, a little below the mouth of the Mohawk, there is an almost continuous settlement for about ten miles, made up of four cities with several intermediate villages. The cities are Albany and Watervliet on the west, Rensselaer and Troy on the east.

In colonial days, **Albany** was one of the most important trading posts in America. It has been the state capital since 1797. The Capitol building, a large and costly structure, overlooks the city and the river for many miles. The Education Building, recently erected, contains the offices of the Education Department of the state, the State Geological offices and collections, and the historical museum and the State Library. Albany is the seat of the State College for Teachers, and is the center of many industries and of a large retail and wholesale trade. On the opposite side of the river there are factories and workshops at **Rensselaer**.

Troy is an important industrial center. Its manufactures include shirts, collars and cuffs, and knit goods. The city also has steel works, rolling mills, and foundries, and is the seat of the Rensselaer Polytechnic Institute. **Watervliet**, opposite Troy, is the seat



Erecting shop, locomotive works, Schenectady

ufacturing city of **Cohoes**, the leading center for knit goods in the state.

Schenectady was built on the broad flood plains bordering the river at the point which was the downstream terminus of navigation. Its two great industries, the making of locomotives and especially the manufacture of electrical machinery and appliances, have caused a very rapid growth in population. Schenectady is the seat of Union College, the oldest in the state except Columbia.

Amsterdam began to develop as a place of manufacture by reason of

of a United States Arsenal and of lumber and woolen industries. From Albany and Troy trunk lines of railroad lead to New York, Montreal, Boston, and Chicago.

Mechanicville, on the west bank of the Hudson, has ample water power and mills for the manufacture of paper and knit goods. The principal industry of **Hoosick Falls** is the manufacture of harvesting machinery.

Saratoga Springs is situated on a plain a few miles west of the Hudson River. Here are the best-known mineral springs of America. In order to protect and preserve these waters, the principal springs and surrounding grounds have been acquired by the state, and are managed in the public interest by a state commission. A few miles above Mechanicville and not far from Saratoga Springs are Bemis Heights, where the battle of Saratoga was fought in 1777.

Hudson Falls is a seat of lumber and paper industries and of stone quarrying. **Glens Falls** has collar and cuff factories and lumber and paper mills.

Cities and Villages of the Mohawk Valley.—There are many cities and villages on and near the banks of the Mohawk River.

Near its junction with the Hudson, the Mohawk falls 70 feet, thus furnishing a splendid water power and making possible the man-

ufacturing city of **Cohoes**, the leading center for knit goods in the state. **Schenectady** was built on the broad flood plains bordering the river at the point which was the downstream terminus of navigation. Its two great industries, the making of locomotives and especially the manufacture of electrical machinery and appliances, have caused a very rapid growth in population. Schenectady is the seat of Union College, the oldest in the state except Columbia.

Amsterdam began to develop as a place of manufacture by reason of its water power, but its industries have become so large that the power now used is chiefly derived from coal. Carpets, knit goods, brooms, and linseed oil are the leading manufactures. A few miles northwest of Amsterdam, and a short distance from the Adirondack border, are **Gloversville** and **Johnstown**, whose great glove industries have already been described.

Little Falls has large water power, as the river descends about 40 feet at this point. Knit goods form the leading industry, and the place has long been a market for dairy products. Between Little Falls and Utica are **Herkimer**, where roll-top desks are made, and **Ilion**, with factories for making typewriters and firearms. **Utica** is the most important railroad center in the Mohawk region. Besides the main line from east to west, two routes lead into the plateau region, and three railway lines lead to northern New York, by way of the Ontario lake plains and the western Adirondacks. The city is the center of a rich farming region, and has some of the largest cotton and woolen mills in the state. The making of clothing and knit goods and of foundry and machine shop products are also large industries. Utica is a leading cheese market.

Rome, on the old Oneida Carrying Place, has manufactures of brass and copper, of locomotives, knit goods, and canned goods.

Review.—1. What is the density of population in New York? 2. What is the density of population in your own county? 3. Where are the densest populations in the state? 4. How many cities are there in New York?

5. What are the boroughs of Greater New York? 6. Give length, width, and altitude of the island of Manhattan. 7. What geographic conditions have favored the growth of the city of New York? 8. In what part of the city is the wholesale trade centered? The retail trade? 9. Name some of its public institutions. 10. Name its chief methods of transportation. 11. Under what waters have subways been built?

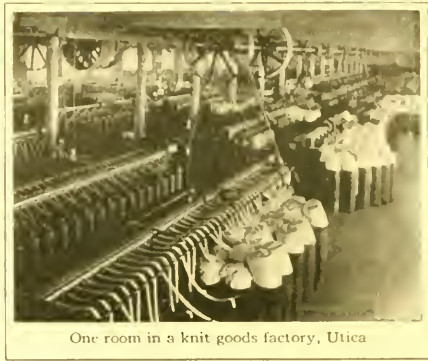
12. Give location and industries of Yonkers; of Newburgh; of Hudson. 13. What institution is at West Point? At Poughkeepsie? 14. What are the two principal buildings of Albany? 15. What are the main industries of Troy? Of Cohoes? Of Glens Falls? 16. What cities are on the Mohawk River? 17. What are the main industries of each?

Cities and Villages of the Lake Plains.

On the lowlands near the Great Lakes are many cities, including three which, after New York, are the largest in the state. These are Buffalo, Rochester, and Syracuse. The two chief reasons for their growth are,—first, they are on one of the great natural transportation routes leading from the seaboard to the west, and second, they are surrounded by wide areas of productive soil.

Oneida is on the south edge of the plain, at the opening of a valley which leads through the plateau to Binghamton. It is a thriving city, with several manufacturing industries. Near it, on the southeast, is **Sherrill**, the smallest city in the state.

Syracuse also is on the south edge of the plain, and its streets and buildings extend



One room in a knit goods factory, Utica

up the northern slopes of the plateau. Formerly its main industry was the making of salt from brines obtained by boring. Now its growth is due to other causes. It is on a spur of the Barge Canal, and has railway connections in all directions. Among its more important manufactures are automobiles, iron and steel products, food stuffs, typewriters, and men's clothing. The city is the seat of Syracuse University. Near Syracuse is the large village of **Solvay**, where great quantities of soda ash, sodium bicarbonate, and other chemical products are made.

Fulton, on the Oswego River, has excellent water power and manufactures woolen goods, firearms, and paper. **Oswego**, situated where the Oswego River enters Lake Ontario, is on the site of what was an important fort in colonial days. The leading industries are the making of matches, starch, and woolen goods, and the manufacture of boilers. It has a good harbor, and ships large amounts of coal.



Syracuse University



Making cameras, Rochester

more than 1200 industrial plants. About Rochester are some of the largest nursery establishments in the United States, for ornamental trees, fruit trees, vegetable and flower seeds, and bulbs. The city has attractive streets and homes and is the seat of the Mechanics' Institute and the University of Rochester.

Batavia is midway between Rochester and Buffalo. Its main industry is the making of agricultural implements. Medina and Albion are large

Auburn, on the outlet of Owasco Lake, is one of the older cities of western New York. Its manufactures are chiefly agricultural implements, shoes, cordage, and twine. **Seneca Falls** is a large village on the outlet of Seneca Lake; it has manufactures of hydraulic machinery. The city of **Geneva** is at the foot of Seneca Lake. It has nurseries and various manufactures, and is the seat of Hobart College and of the State Agricultural Experiment Station. **Penn Yan** is at the foot of Keuka Lake, and **Canandaigua** is at the foot of the lake bearing the same name. **Newark** and **Lyons** are on the main line of railroad between Syracuse and Rochester.

Rochester lies on both sides of the Genesee River a few miles from its mouth, and includes the lake port formerly known as the village of Charlotte. Through this port, much trade is carried on with Toronto and other places in Canada. Rochester is on a branch of the Barge Canal and has several lines of railway. It is in the midst of a most fertile region. Ever since the early days, when western New York was the wheat center of the United States, there have been large flouring mills at Rochester, where the falls of the Genesee River furnish much water power. The leading manufactures at the present time are men's clothing, shoes, and photographic apparatus, in which industry Rochester leads the world. There are, however, many other industries, and the city has

villages in Orleans County, in the midst of a rich farming and fruit-raising region. At Albion are extensive quarries. **Lockport** is a manufacturing city, whose largest industry is flour and grist milling.

Buffalo, in 1910, ranked tenth in population among the cities of the United States, but ninth in the value of its manufactured products. It is very natural that a great city should grow up at the foot of Lake Erie. Between Lake Erie and Lake Ontario navigation is interrupted by the rapids and falls of Niagara. Buffalo is therefore the eastern terminus of most of the Great Lakes traffic from Chicago, Milwaukee, Duluth, Detroit, and many other lake ports. It is the point where the products of the west are transferred from lake ships to the railways or canal. Trunk lines of railways reach out in all directions. Buffalo handles immense quantities of flour and wheat as well as other grains.



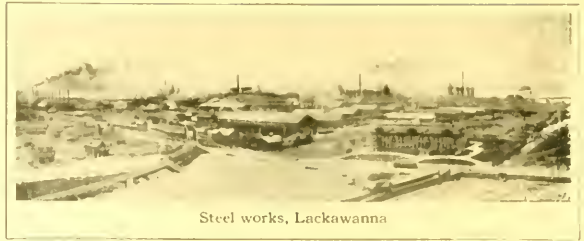
A lake steamer at Buffalo

Many large elevators have been built on the lake front to take care of the transfer of grain from ship to car or barge. Besides grain, there is a vast traffic in iron, coal, and oil. Coal is readily accessible from Pennsylvania, and is brought to Buffalo for local use and for shipment up the lakes. The city is near extensive oil and natural gas regions, and has the advantage of electrical power transmitted from Niagara Falls. This power is used for lighting the city, for street railways, and for manufacturing purposes. Buffalo is an important market for lumber, live stock, and fish.

Buffalo has more than 1750 manufacturing establishments. The chief industries are slaughtering and meat packing, foundry and machine shop products, and flour and gristmill products. Copper smelting and refining, and the making of automobiles, linseed oil, candles, and wax, form other large industries. In Buffalo are the University of Buffalo, a state normal school, and other educational institutions.



Metal furniture factory, Jamestown



Steel works, Lackawanna



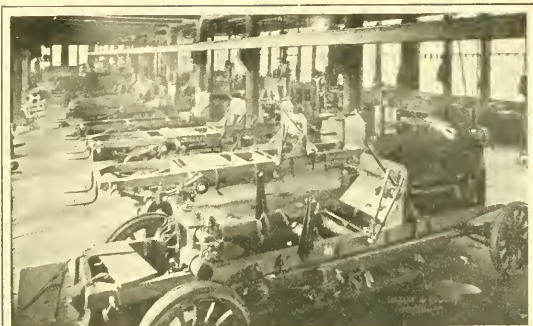
Electric ovens for baking wheat biscuit, Niagara Falls

Adjoining Buffalo, but under a charter of its own, is the city of Lackawanna, which has grown up in recent years as a steel making city, using coal from Pennsylvania, and iron ore from the Lake Superior region. Several thousand men are employed in this industry. Between Buffalo and Niagara Falls are the cities of Tonawanda and North Tonawanda. The latter is an important lumber market. Niagara Falls has become an important center, not only because of the attraction of the great falls and the fact that several trunk lines of railway cross the river at this point, but because of the electrical power developed here. It

has become a great center for the manufacture of chemicals, prepared foods, wood pulp, paper, and abrasive materials. Near Niagara Falls is Niagara University. East of Buffalo are the villages of Depew and Lancaster, with shops and factories.

On the narrow lake plain southwest of Buffalo, in Chautauqua County, are Fredonia and Dunkirk. In the former is one of the state normal schools and in the latter there are railroad shops and locomotive works.

Cities and Villages of the Plateau.—In the western part of the plateau is Jamestown, a city on the outlet of Chautauqua Lake. It has manufactures of worsteds and of wooden



Assembling motor fire engine trucks, Elmira

and metal furniture. On the shores of the lake are the Chautauqua Assembly grounds, the headquarters of a widely known movement for popular education. **Salamanca** is a railroad center, with car shops and manufactures of lumber. **Olean** is in the oil region, and its leading industry is the refining of petroleum. **Perry** has manufactures of knit goods, and **Wellsville** is the principal village of Allegany County. **Hornell** has large car shops, and **Corning** has railroad shops and glass factories.

Elmira is a large city and important railway center on the Chemung River. Among its leading industries are the making of fire engines and of automobile parts. This city is the seat of Elmira College and also the State Reformatory. East of Elmira are **Waverly** and **Owego**, with shops and factories.

The largest city in the plateau is **Binghamton**, situated at the junction of the Susquehanna and Chenango rivers. It has ample railroad facilities, and a large retail and wholesale trade. Binghamton has large manufactures of tobacco. Near the city, on the Susquehanna River, are **Johnson City** and **Endicott**. At both these places are large shoe factories.

Ithaca is magnificently situated at the head of Cayuga Lake, and is the seat of Cornell University. **Cortland** has manufactures of iron and steel, including wire and rolling mill products, and is the seat of a state normal school. **Norwich** is a trading center for a large dairying region between Utica and Binghamton. **Oneonta** has large railroad shops and is the seat of a state normal school. **Port Jervis**, on the Delaware River, is in the Appalachian valley southeast of the plateau. It has several kinds

of manufactures.

Cities and Villages of Northern New York.—**Watertown** is the largest city in the northern part of the state. Important water power is here supplied by the Black River, and foundry and machine shop work and pulp and paper making are the leading industries.

Ogdensburg, in St. Lawrence County, is next to Watertown in population. Its chief interests are in grain, lumber, and manufactures of lumber. **Gouverneur**, **Potsdam**, and **Massena** are important villages in St. Lawrence County. **Potsdam** is the seat of a state normal school. **Massena** has water power, and here are located the largest aluminum works in the United States.



Rolling cigars, Binghamton

Lowville is the county seat and leading village of Lewis County, and **Malone** is the county seat and chief center of business in Franklin County. **Plattsburg** is on Lake Champlain. It is the seat of a state normal school, and has lumber interests. A little south of this city is the meeting place of the Catholic Summer School of America. **Whitehall** is at the head of Lake Champlain, and is the northern terminus of the Champlain branch of the Barge Canal. The largest village in the midst of the Adirondacks is **Saranac Lake**, a health resort.

Review.—1. What advantage of location has Syracuse? 2. What are the leading industries of Syracuse? 3. What three cities are each on or near the foot of one of the Finger Lakes? 4. What transportation facilities has Oswego? 5. Where is the State Agricultural Experiment Station? 6. What are the chief industries of Rochester? 7. What cities are in Niagara County?

8. What rank among American cities has Buffalo in population? In manufactures? 9. What conditions promote the commerce of Buffalo? 10. What are the leading interests of Niagara Falls? Of North Tonawanda? Of Lockport?

11. What are the industries of Jamestown? Of Olean? Of Corning? 12. State the location of Elmira; of Binghamton. 13. What university is at Ithaca? 14. Locate Cortland; Norwich; Oneonta. 15. What are the leading industries of Watertown? Of Ogdensburg?

Government.—The chief executive of the state is the Governor, who holds office for two years. Other state officers are: the Lieutenant Governor, the Secretary of State, the Attorney-General, and the State Engineer. The legislature, or lawmaking body,



Library of Cornell University, above the head of Cayuga Lake

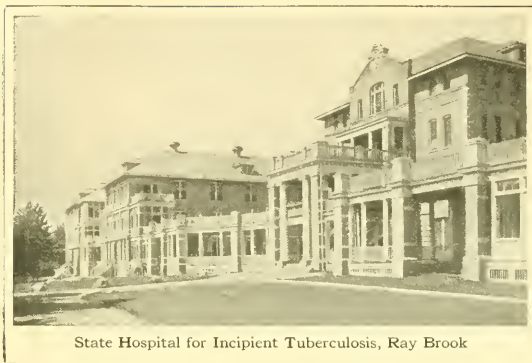
consists of two houses,—the Senate, with 51 members elected for two years, and the Assembly, with 150 members elected for one year. There are departments of Public Works, Banking, Insurance, Factory Inspection, and Excise. Two Public Service Commissions, one for Greater New York, the other for the rest of the state, have supervision of railways and of such utilities as the telegraph and telephone service. Various commissions care for public reservations in the Adirondacks, at Saratoga Springs, Niagara Falls, and elsewhere.



A drinking place, Saratoga Springs

The Court of Appeals is the highest state court. Below it are many divisions and parts of the Supreme Court, with more than 100 judges. Lower courts are provided for counties, cities, and towns.

The state is divided into 62 counties. Each county, except those in Greater New York, is divided into towns, or townships. Many of the cities, however, do not form part of any town. Each county, town, city, and village has a government of its own, with powers fixed by the state government.



State Hospital for Incipient Tuberculosis, Ray Brook

The chief officers of the county are the judge, the district attorney, the county clerk, the sheriff, and the coroners. Each county has a capital called the county seat. Here are the county court, the sheriff's office, and the jail, and the office of the county clerk. The chief officer of each town is a supervisor; and the town supervisors, with others chosen by cities, make up the Board of Supervisors which is the legislative body of the county. The chief officers of a city are the mayor and the council or board of aldermen.

Each voter must have been a citizen of the United States for ninety days, and must have resided one year in the state, four months in the county, and 30 days in the election district.

Charities and Penal Institutions.—Twelve commissioners constitute the State Board of Charities. They are appointed by the Governor, with the confirmation of the Senate, and hold office for eight years. A large number of charitable and reformatory institutions are supported partly or wholly by the state and its various subdivisions. The Board of Charities has oversight of these institutions and carries on regular visitations. Among the kinds of people thus cared for are juvenile delinquents, the feeble-minded, orphans, the blind, the deaf and dumb, crippled and deformed children, and the aged. Among the

institutions under the care of this board are industrial schools, soldiers' and sailors' homes, county almshouses, and hospitals for tuberculosis patients.

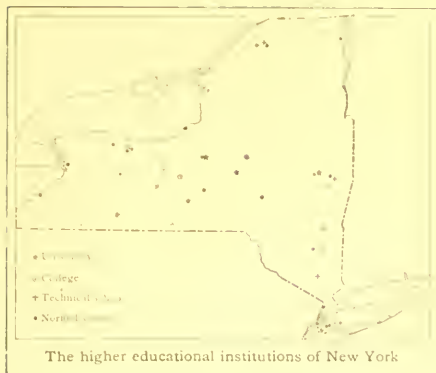
Several state prisons and reformatories receive convicts whose sentence is for a period of more than one year. Various penitentiaries in the state receive those convicted of minor offenses and sentenced for short periods. Hospitals for the insane are in the care of the Board of Lunacy.

Education.—The educational work of the state is in the charge of the University of the State of New York. This is not a university in the sense of being a localized school. Its powers are committed to twelve persons called Regents who meet in Albany. They are elected by the legislature. Their presiding officer is styled the Chancellor of the University, and they appoint the Commissioner of Education, who has under his special charge the rural schools, the elementary and high schools of the villages and cities, and the state normal schools.

The state is divided into a large number of districts, in each of which an officer called the district superintendent is responsible for the rural schools. In the larger villages and cities, a superintendent of schools is the chief executive officer. Education is compulsory for all children between the ages of eight and sixteen.

The State College for Teachers is at Albany, and there are also state normal schools located at Brockport, Buffalo, Cortland, Fredonia, Geneseo, New Paltz, Oneonta, Oswego, Plattsburg, and Potsdam. Some of the large cities maintain similar institutions; thus in Greater New York are Hunter College, and the New York, Brooklyn, and Jamaica Training Schools for Teachers.

The higher schools are the universities, colleges, and technical schools. Many of



these have grown up under the patronage of religious denominations, but are now classed as non-sectarian because no religious conditions are enforced and faculty and students are representative of many churches. On the other hand, there are many institutions under Catholic control, including Fordham University in the city of New York, Niagara University near Niagara Falls, and colleges at New Rochelle, in New York (Mt. St. Vincent, Manhattan, Brooklyn, St. Francis, and St. John's), in Buffalo (Canisius and D'Youville), and at Allegany in Cattaraugus County (St. Bonaventure's).

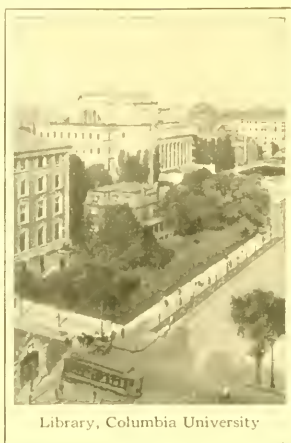
The oldest of the higher educational institutions of the state is Columbia University, in the city of New York, founded in 1754. It has the largest enrollment of all American universities. Affiliated with Columbia are Barnard College for women, and Teachers College.

Other large universities, each with thousands of students, are New York University in the city of New York; Cornell University at Ithaca, on a splendid site overlooking Cayuga

Lake; and Syracuse University in Syracuse. Smaller universities are those of Buffalo, of Rochester, of Alfred in Allegany County, Colgate University at Hamilton in Madison County, St. Lawrence University at Canton in St. Lawrence County, and Union University, including Union College at Schenectady, and professional colleges at Albany.

The New York State College of Agriculture is at Cornell University, and the State College of Forestry is at Syracuse University. Besides the many other schools and colleges which belong to the universities, there are some independent colleges, as Adelphi in Brooklyn, Hamilton at Clinton in Oneida County, and Hobart at Geneva; and some independent technical schools, as Pratt Institute and the Polytechnic Institute in Brooklyn, the Military Academy at West Point, the Rensselaer Polytechnic Institute at Troy, the Clark-

son Memorial School of Technology at Potsdam, and the Mechanics' Institute at Rochester. The College of the City of New York, in Manhattan borough, is a large college supported by the city. Colleges for women include Elmira College at Elmira, Wells College at Aurora on Cayuga Lake, and Vassar College—one of the oldest and most widely known in the country—at Poughkeepsie.



Review.—1. What are the principal state officers? 2. What is the duty of the Public Service Commissions? 3. How many counties in New York? 4. What institutions are found in each county seat? 5. What are the conditions which qualify voters in this state? 6. What are the duties of the State Board of Charities?

7. What is the University of the State of New York? 8. What normal school is nearest your home? 9. Locate four colleges for women; two large universities; two technical schools.

COUNTIES OF NEW YORK — AREA AND POPULATION, 1920

Sq. MILES	POPULATION	Sq. MILES	POPULATION	Sq. MILES	POPULATION
Albany 527	186,106	Franklin 1,678	43,544	Oneida 1,250	182,485
Allegany 1,047	36,842	Fulton 516	44,927	Onondaga 781	211,465
Bronx 42	732,016	Greene 496	37,976	Ontario 619	52,652
Broome 795	113,610	Hamilton 643	25,796	Orange 834	119,844
Cattaraugus 1,343	71,323	Herkimer 1,459	39,970	Orleans 396	28,619
Cayuga 703	65,224	Jefferson 1,274	64,962	Oswego 966	71,045
Chautauqua 1,069	115,348	Kings 70	2,022,250	Otsego 1,009	46,200
Chemung 407	65,872	Lewis 1,276	23,794	Putnam 233	10,802
Chenango 894	34,969	Livingston 631	36,830	Queens 105	466,811
Clinton 1,649	43,898	Madison 650	39,535	Rensselaer 663	113,129
Columbia 644	38,910	Monroe 663	352,034	Richmond 48	115,959
Cortland 503	29,625	Montgomery 398	57,928	Rockland 183	45,548
Delaware 1,449	42,774	Nassau 274	125,727	St. Lawrence 2,701	88,121
Dutchess 866	91,747	New York 21	2,284,103	Saratoga 823	60,029
Eric 1,634	634,888	Niagara 522	118,795	Schenectady 206	109,363
Essex 1,836	31,871			Schoharie 642	21,393

Total. 47,654 10,384,829

CITIES OF NEW YORK — POPULATION, 1920

Albany 113,344	Glen Cove 8,664	Newburgh 30,366	Rochester 295,750
Amsterdam 33,524	Glovers Falls 16,638	New Rochelle 36,213	Rome 26,341
Auburn 36,192	Gloversville 22,075	New York 5,620,048	Saratoga Springs 13,181
Batavia 13,541	Hornell 15,025	Niagara Falls 50,760	Salamanca 9,276
Beacon 16,996	Hudson 11,745	North Tonawanda 15,482	Schenectady 88,723
Binghamton 66,809	Ithaca 17,004	Orangetown 8,268	Sherrill 1,761
Buffalo 506,775	Jamestown 38,917	Odensburg 14,669	Syracuse 171,717
Canandaigua 73,859	Johnstown 10,928	Olean 20,566	Tonawanda 10,668
Cohoes 22,987	Kingston 26,688	Oneida 10,541	Troy 72,013
Corning 15,820	Lackawanna 17,018	Oneonta 11,582	Utica 94,156
Corning 13,294	Little Falls 13,029	Oswego 23,626	Watertown 31,285
Dunkirk 19,339	Lockport 21,308	Plattsburg 10,909	Watervliet 16,073
Elmira 45,393	Mechanicville 8,166	Port Jervis 10,171	White Plains 21,031
Fulton 13,043	Middletown 18,420	Poughkeepsie 35,000	Yonkers 100,176
Geneva 14,648	Mount Vernon 42,726	Rensselaer 10,823	

VILLAGES OF 2500 OR MORE — POPULATION, 1920

VILLAGE	COUNTY	POPULATION	VILLAGE	COUNTY	POPULATION	VILLAGE	COUNTY	POPULATION
Albion	Orleans	4,683	Gowanda	Cat. & Erie	2,673	Patchogue	Suffolk	4,031
Amityville	Suffolk	3,265	Granville	Washington	3,024	Peckskill	Westchester	15,868
Avon	Livingston	2,585	Green Island	Albany	4,411	Penn Yan	Yates	5,215
Babylon	Suffolk	2,523	Greenport	Suffolk	3,122	Perry	Wyoming	4,717
Baldwinsville	Onondaga	3,685	Hamburg	Erie	3,185	Pleasantville	Westchester	3,900
Ballston Spa	Saratoga	4,103	Hastings-on-Hudson	Westchester	5,526	Port Chester	Westchester	16,573
Bath	Steuben	4,795	Haverstraw	Rockland	5,226	Potsdam	St. Lawrence	4,039
Brockport	Monroe	2,930	Hempstead	Nassau	6,382	Rockville Center	Nassau	6,262
Bronxville	Westchester	3,055	Herkimer	Westchester	10,453	Rye	Westchester	5,308
Canastota	Madison	3,995	Highland Falls	Orange	2,588	Sag Harbor	Suffolk	2,993
Canton	St. Lawrence	2,631	Hoosick Falls	Rensselaer	4,896	Saranac Lake	Essex & Frank	5,174
Carthage	Jefferson	4,320	Hudson Falls	Washington	5,761	Saugerties	Ulster	4,013
Carskill	Greene	4,728	Ilion	Herkimer	10,169	Scarsdale	Westchester	3,506
Cedarhurst	Nassau	2,838	Irvine	Westchester	2,701	Scotia	Schenectady	4,358
Clyde	Wayne	2,528	Johnson City	Broome	8,587	Seneca Falls	Seneca	6,389
Cooperstown	Otsego	2,725	Kenmore	Erie	3,160	Sidney	Delaware	2,670
Chatham	Columbia	2,710	Lancaster	Erie	6,259	Silver Creek	Chautauqua	3,260
Corinth	Saratoga	2,576	La Salle	Niagara	3,813	Solvay	Onondaga	7,352
Dansville	Livingston	4,681	Lawrence	Nassau	2,861	Southampton	Suffolk	2,635
Depew	Erie	5,850	LeRoy	Genesee	4,203	Spring Valley	Rockland	44,228
Dobbs Ferry	Westchester	4,401	Lewisville	Lewis	3,127	Suffern	Rockland	31,554
Dolgeville	Fulton & Herk	3,448	Lynbrook	Nassau	4,367	Tarrytown	Westchester	5,807
East Aurora	Erie	3,793	Lyons	Wayne	4,253	Tuckahoe	Westchester	3,590
East Rochester	Monroe	3,901	Malone	Franklin	7,550	Upper Lake	Franklin	2,568
East Syracuse	Onondaga	4,106	Mamaroneck	Westchester	6,276	Union	Broome	3,303
Ellenville	Ulster	3,116	Massena	St. Lawrence	5,993	Walden	Orange	5,493
Elmira Heights	Chemung	4,188	Medina	Orleans	6,011	Walton	Delaware	3,598
Endicott	Broome	9,500	Mineola	Nassau	3,016	Wappingers Falls	Dutchess	3,335
Fairport	Monroe	4,626	Mohawk	Herkimer	2,919	Warsaw	Wyoming	3,622
Falconer	Chautauqua	2,742	Mt. Kisco	Westchester	3,901	Waterford	Saratoga	2,637
Fort Edward	Washington	3,871	Mt. Morris	Livingston	3,312	Watertown	Seneca	3,899
Fort Plain	Montgomery	2,747	Newark	Wayne	6,694	Watkins	Schuyler	2,785
Frankfort	Herkimer	4,198	North Tarrytown	Westchester	5,927	Waverly	Tioga	5,270
Fredonia	Chautauqua	6,051	Nyack	Rockland	4,444	Wellsville	Allegany	5,076
Freeport	Nassau	8,599	Ossining	Westchester	19,739	Westfield	Chautauqua	3,413
Goshen	Orange	2,843	Owego	Cat. & Erie	4,147	Whitehall	Washington	5,258
Gouverneur	St. Lawrence	4,143				Whitesboro	Oneida	3,038

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